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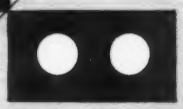

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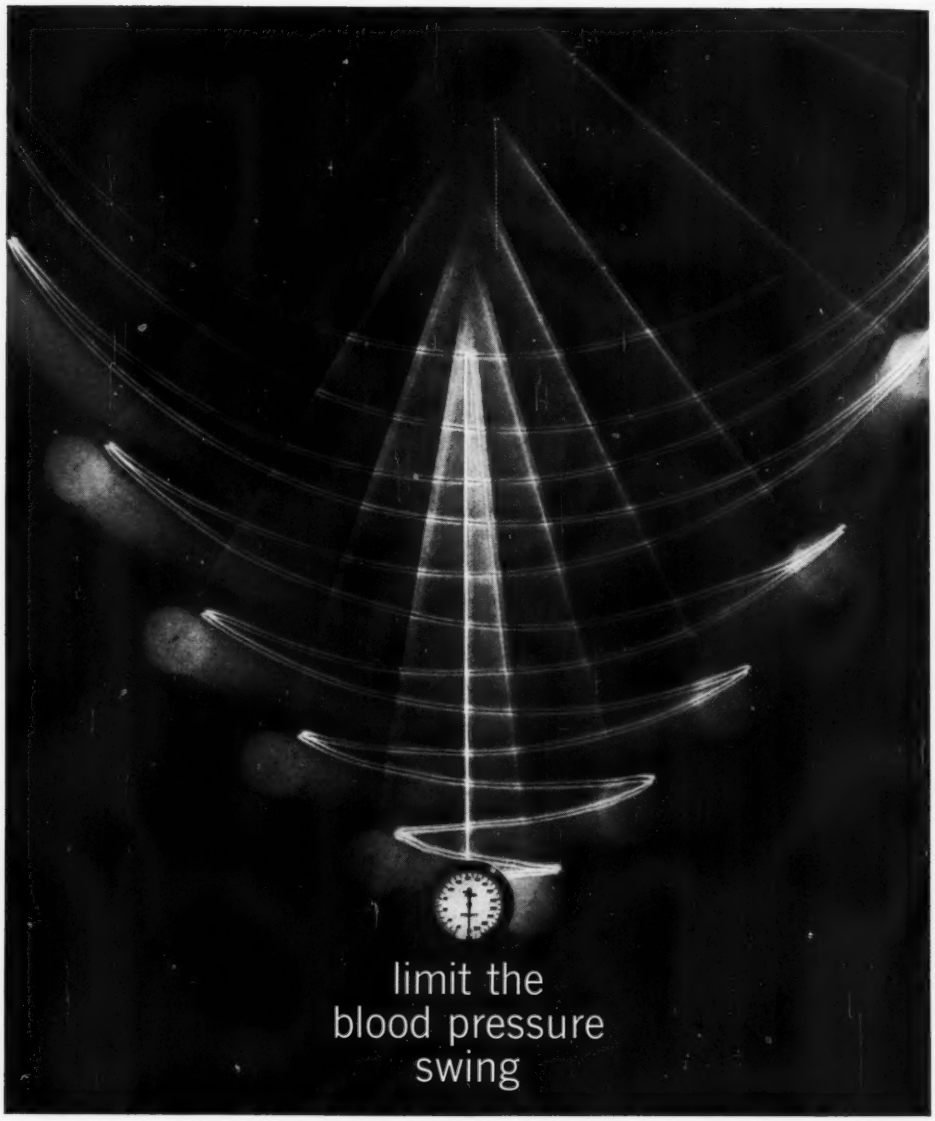

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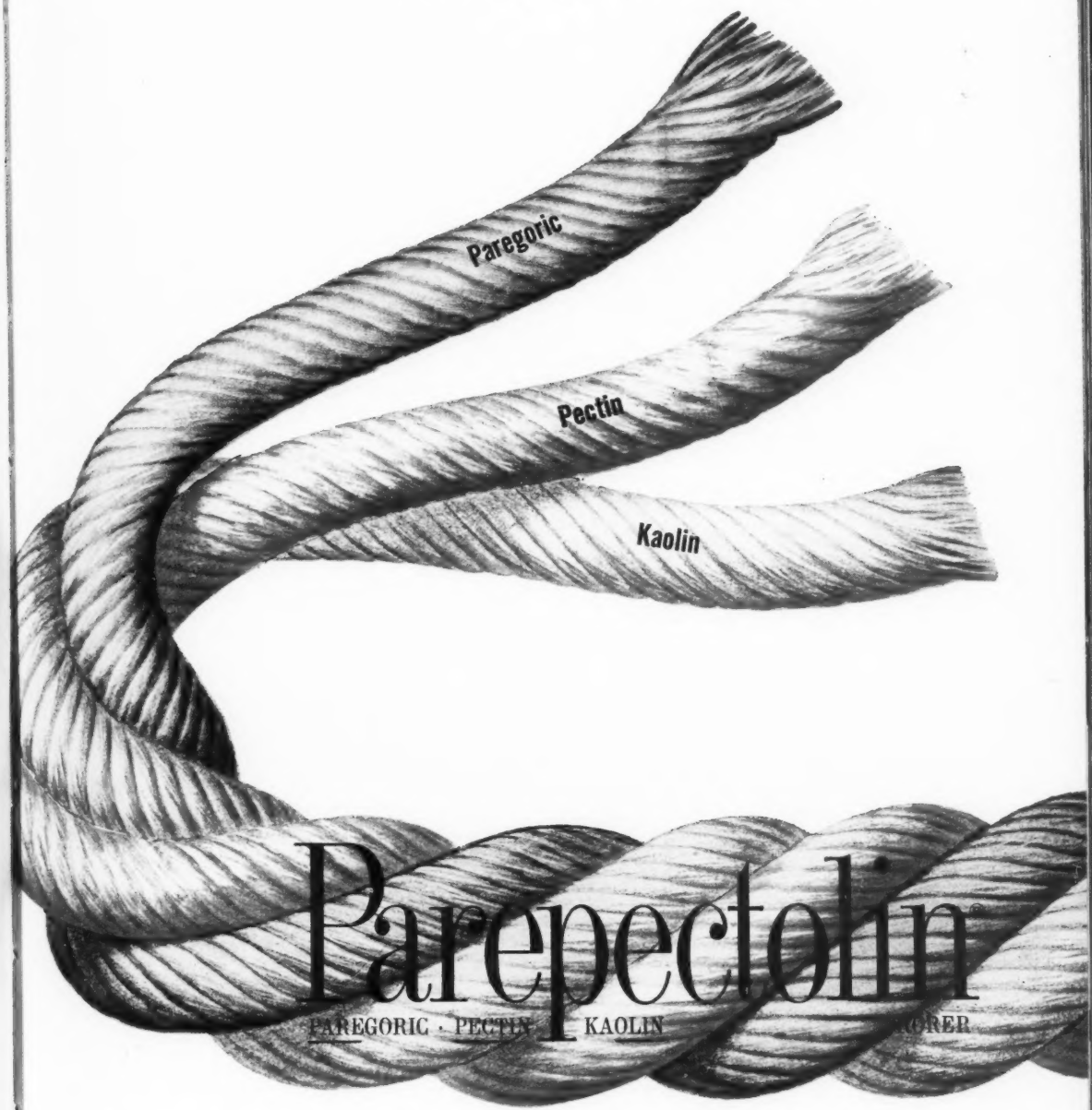

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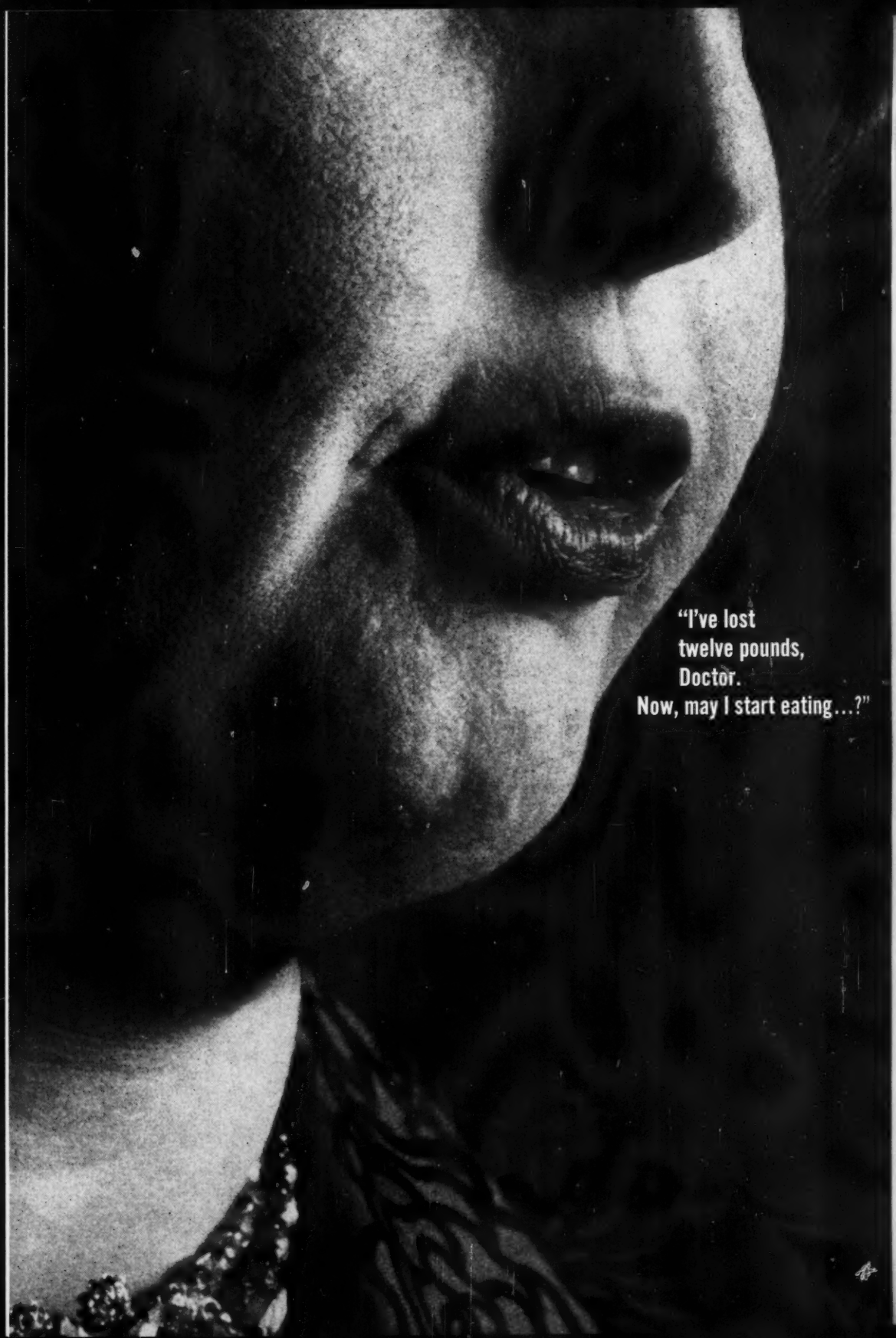
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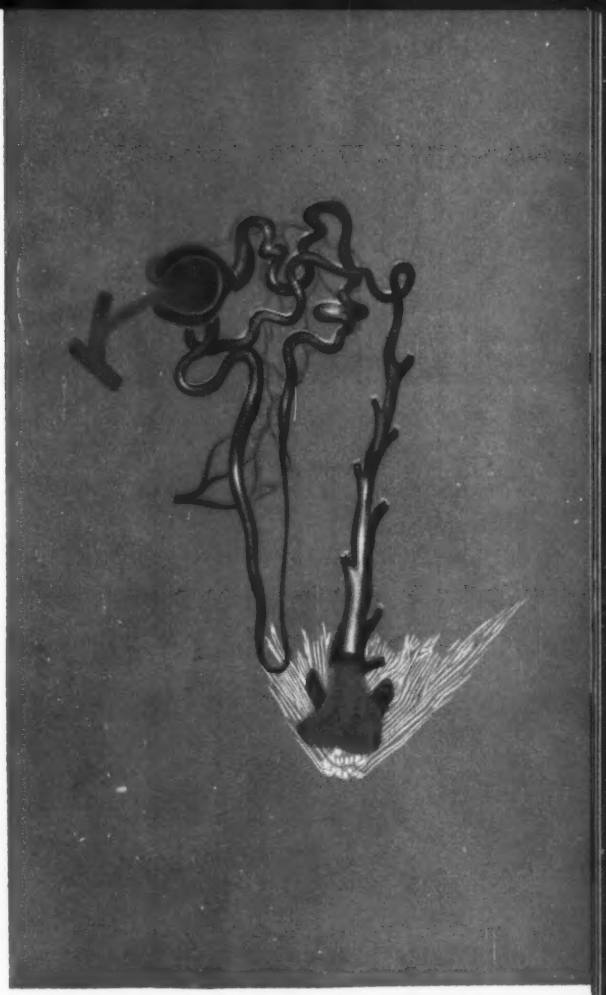

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References: 1. Schreiner, G. E.: A.M.A. Arch. Int. M. **102**:32, 1958. 2. Freedman, L. R., and Beeson, P. B.: Yale J. Biol. & Med. **30**:406, 1958. 3. Rocha, H., et al.: Yale J. Biol. & Med. **30**:341, 1958.

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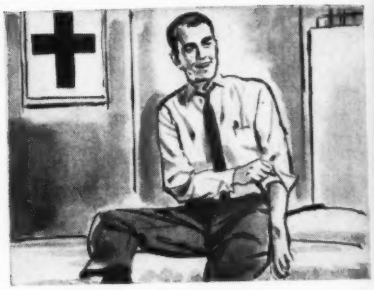

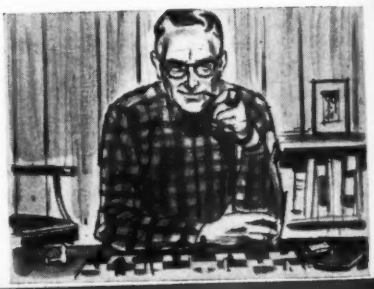

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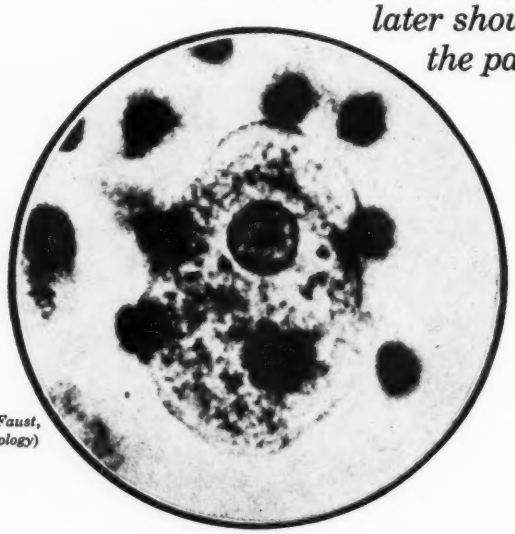

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1. Frye, W.W., and Lampert, R.: Treatment of Asymptomatic Endamoeba histolytica Carriers with a Formulation of Bacitracin-Methylene Disalicylate and Iodochlorhydroxyquin (Anameba). (To be published in Am. J. Gastroenterol., October, 1960.)

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References: 1. Hock, C. W.: Am. J. Gastroenterol. 34:293 (Sept.) 1960. 2. Leming, B. H., Jr.: Clin. Med. 6:423 (Mar.) 1959. 3. Data in Roerig Medical Department files.

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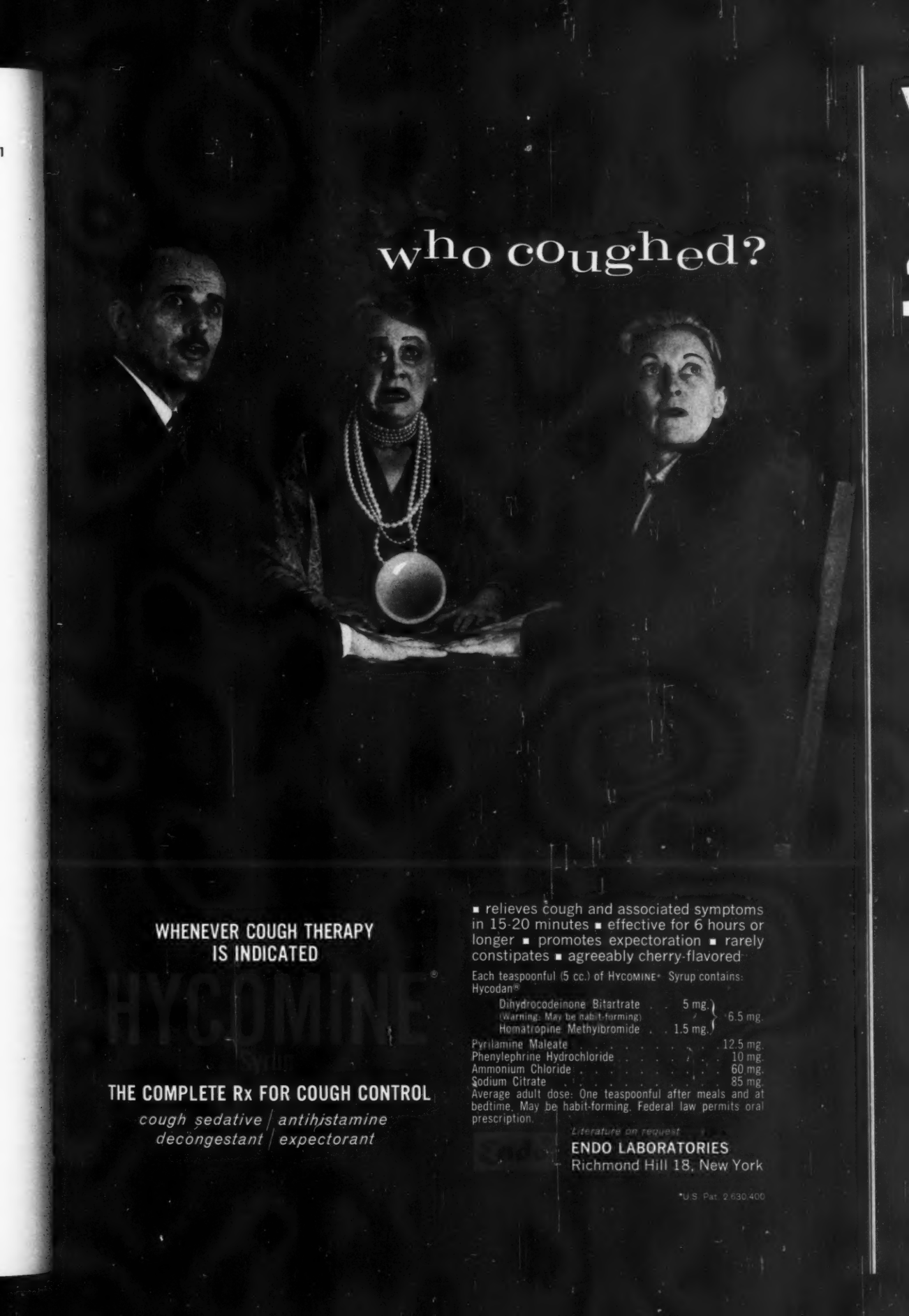

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References: 1. Spielman, A. D.: In press. 2. Schwartz, E., et al.: Am. Pract. & Digest Treat. 7:585, 1956. 3. Ogden, H. D., and Fuchs, M.: J. Louisiana M. Soc. 111:175, 1959. 4. Drill, W. A.: Pharmacology in Medicine, New York, McGraw-Hill Co., 1954, p. 41.

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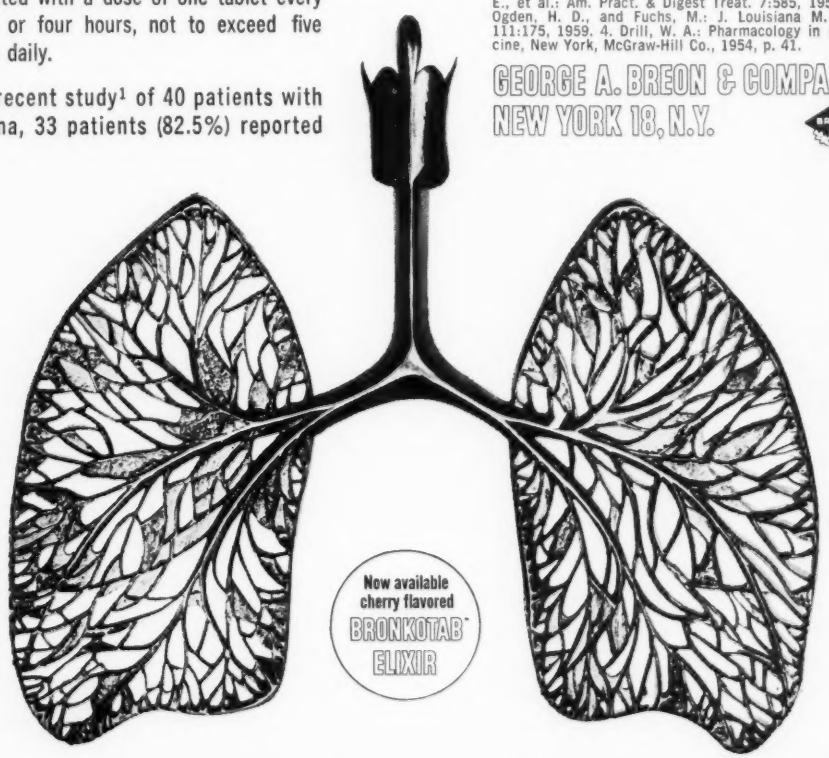

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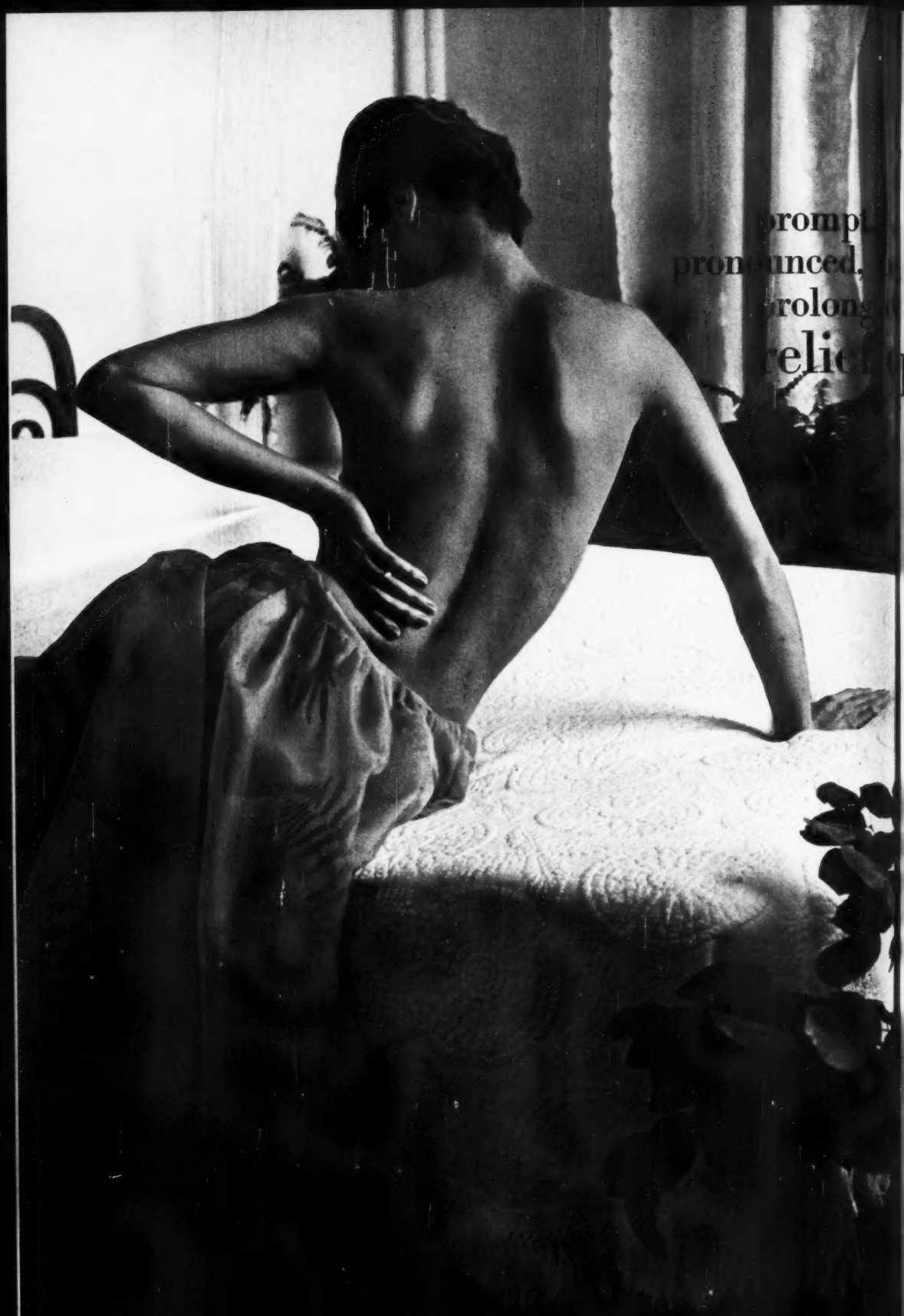
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Clinical responses to ROBAXIN therapy, as reported by investigators:

"*marked*" in 26 out of 33 patients, moderate in 6...[1] "*pronounced*" in 37 out of 58 patients, moderate in 20...[2] "*good*" in 25 out of 38 patients, moderate in 6...[5] "*excellent*" in 14 out of 17 patients, moderate in 2...[6] "*significant*" in 27 out of 30 patients...[7] "*gratifying*" in 55 out of 60 patients...[8] "*effective*" in 32 out of 32 patients...[9] "*marked*" in 27 out of 46 patients, moderate in 6...[4] "*good*" in 57 out of 60 patients, moderate in 3.[10]

ROBAXIN exhibits "great freedom from undesired side reactions,"[3] does not produce "concomitant euphoria or partial anesthesia,"[10] and permits patients to retain concentration and awareness.[8]

For immediate relaxation of acute skeletal muscle spasm:

Robaxin® Injectable **– each ampul containing 1.0 Gm. of methocarbamol in 10 cc. of sterile solution.**

For initiating therapy or maintaining relaxation induced by ROBAXIN Injectable:

Robaxin® Tablets **– 0.5 Gm. (white, scored) in bottles of 50 and 500.**

Also available: *When pain and spasm require concurrent analgesic and relaxant action:*

Robaxisal® Tablets **– Robaxin with Aspirin**

– and for skeletal muscle relaxation with more comprehensive analgesia:

Robaxisal®– PH **– Robaxin with Phenaphen®**

Literature available to physicians on request.

REFERENCES: 1. Carpenter, E. B.: Southern M.J. 51:627, 1958. **2.** Forsyth, H. F., J.A.M.A. 167:163, 1958. **3.** Hudgins, A. P.: Clin. Med. 6:2321, 1959. **4.** Grisolia, A., and Thomson, J. E. M.: Clin. Orthopaedics 13:299, 1959. **5.** Lewis, W. B.: California Med. 90:26, 1959. **6.** O'Doherty, D. S., and Shields, C. D.: J.A.M.A. 167:160, 1958. **7.** Park, H. W.: J.A.M.A. 167:168, 1958. **8.** Plumb, C. S.: Journal-Lancet 78:531, 1958. **9.** Poppen, J. L., and Flanagan, M. E.: J.A.M.A. 171:298, 1959. **10.** Schaubel, H. J.: Orthopedics 1:274, 1959.

A. H. ROBINS CO., INC., Richmond 20, Virginia

Making today's medicines with integrity ... seeking tomorrow's with persistence

in mucopurulent rhinitis of U.R.I., sinusitis, and allergy

one-two clear-through relief with

TRYPP
NOSE DROPS

mucolytic enzyme-decongestant

1. the mucolytic action of the enzyme, trypsin, thins and liquefies thick mucus and facilitates removal of crusts...This allows TRYPP'S...

2. superior, safer vasoconstrictor to reach and shrink swollen, congested membranes and initiate proper drainage and easy breathing.

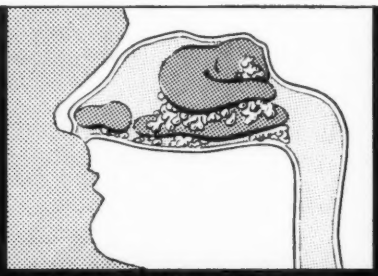
clinically proven in over 500 infants, children and adults[1,2] with upper respiratory infections, nasal allergies and exacerbations of chronic sinusitis. Virtually no irritation or sensitivity.[1]

Each 8 cc. of TRYPP NOSE DROPS provides:
Trypsin . . . . . 7500 Units (3 mg.)
Phenylephrine HCl . . 0.25% (20 mg.)
with gelatin and other excipients and stabilizers

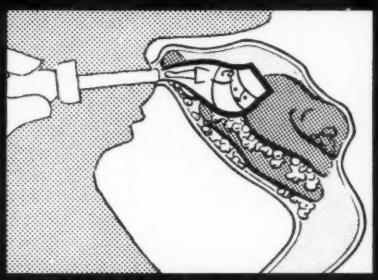
Supplied: in 8 cc. package of powder, bottle of liquid diluent (gives isotonic solution pH 6.5 when mixed) and dropper.

1. Maffia, A. J., Levbarg, M., Perillo, L. A. and Greenberg, W.. Arch. of Pediatrics 77:28, 1960.
2. Taterka, H. and Wasserman, E.: Personal communication.

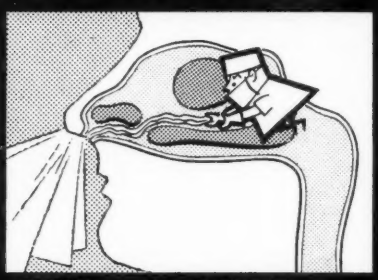
u. s. vitamin & pharmaceutical
CORPORATION
Arlington-Funk Laboratories, division
250 East 43rd Street, New York 17, N. Y.



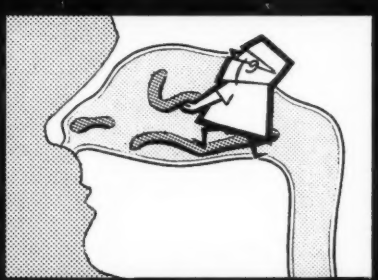
Mucopurulent discharge and edema obstruct nasal passages in U.R.I., sinusitis and allergy.



TRYPP NOSE DROPS—mucolytic trypsin plus vasoconstricting phenylephrine—are inserted.



TRYPP's enzymatic action (trypsin) liquefies thick mucus, loosens crusts, initiates drainage, and permits . . .



TRYPP's decongestant (phenylephrine) to shrink swollen mucous membranes... and open passages for easy breathing.

961

IN GENITOURINARY INFECTIONS

Gantrisin

THE QUALITY OF GREATNESS

Reports in hundreds of leading journals and scores of standard textbooks reflect the position of Gantrisin as a drug of choice in genitourinary infections.

ROCHE

Consult literature and dosage information, available upon request, before prescribing.

ROCHE LABORATORIES • Division of Hoffmann-La Roche Inc.

GANTRISIN® brand of sulfisoxazole

anticholinergic
KEEPS THE STOMACH FREE OF PAIN

tranquilizer
KEEPS THE MIND OFF THE STOMACH

Milpath acts quickly to suppress pain and spasm, and to allay anxiety and tension with minimal side effects.

AVAILABLE IN TWO POTENCIES:

Milpath-400 — Yellow, scored tablets of 400 mg. Miltown (meprobamate) and 25 mg. tridihexethyl chloride. Bottle of 50.

Dosage: 1 tablet t.i.d. at mealtime and 2 at bedtime.

Milpath-200 — Yellow, coated tablets of 200 mg. Miltown (meprobamate) and 25 mg. tridihexethyl chloride. Bottle of 50.

Dosage: 1 or 2 tablets t.i.d. at mealtime and 2 at bedtime.

Milpath®

®Miltown + *anticholinergic*

WALLACE LABORATORIES *Cranbury, N. J.*

1275

1961

a breathing spell from asthma

Quadrinal*

a rapid way to clear the airway

- **stops wheezing**
- **increases cough effectiveness**
- **relieves spasm**

In chronic disorders associated with obstructed respiration, the dependable antispasmodic and expectorant action of Quadrinal rapidly clears the bronchial tree. Patients breathe more easily and acute episodes of bronchospasm are often eliminated. Quadrinal is well tolerated, even on prolonged administration. The potassium iodide in Quadrinal provides an expectorant of time-tested effectiveness and safety.

Indications: Bronchial asthma, chronic bronchitis, pulmonary fibrosis, pulmonary emphysema.

Quadrinal Tablets, containing ephedrine HCl (24 mg.), phenobarbital (24 mg.), 'Phyllicin'* (theophylline-calcium salicylate) (130 mg.), and potassium iodide (0.3 Gm.).

Also available—
a new Quadrinal dosage form with taste-appeal for all age groups:
fruit-flavored QUADRINAL SUSPENSION (1 teaspoonful = 1/2 Quadrinal Tablet)

KNOLL PHARMACEUTICAL COMPANY, ORANGE, NEW JERSEY

*Quadrinal, Phyllicin®

In intestinal "grippe"

prompt 4 way check of diarrhea

- Curbs excessive peristalsis
- Adsorbs toxins and gases
- Soothes inflamed mucosa
- Provides intestinal antisepsis

POMALIN

TRADEMARK

Liquid

EFFECTIVE ANTIDIARRHEAL

FORMULA: *Each 15 cc. (tablespoon) contains:*

Sulfaguanidine U.S.P.	2 Gm.
Pectin N.F.	225 mg.
Kaolin	3 Gm.
Opium tincture U.S.P.	0.08 cc.

(equivalent to 2 cc. paregoric)

DOSAGE: **Adults:** Initially 1 or 2 tablespoons from four to six times daily, or 1 or 2 teaspoons after each loose bowel movement; reduce dosage as diarrhea subsides.

Children: ½ teaspoon (=2.5 cc.) per 15 lb. of body weight every four hours day and night until stools are reduced to five daily, then every eight hours for three days.

SUPPLIED: *Bottles of 16 fl. oz. (raspberry flavor, pink color)*

Exempt Narcotic. Available on Prescription Only.

Winthrop LABORATORIES
New York 18, N. Y.

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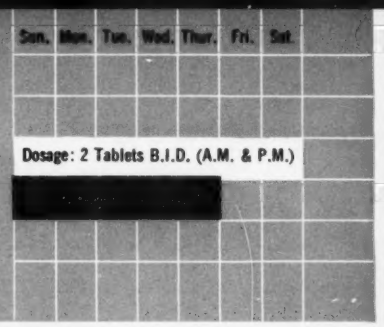


in premenstrual tension only neo Bromth® treats the whole syndrome

It was the introduction of neo Bromth several years ago that created such widespread interest in the premenstrual syndrome—because of neo Bromth's specific ability to prevent the development of the condition in the first place.

The action of neo Bromth is not limited merely to control of abnormal water retention, or of nervousness, or of pain—or any other single or several of the multiple manifestations characteristic of premenstrual tension. neo Bromth effectively controls the *whole* syndrome.

neo Bromth is also completely free from the undesirable side effects associated with such limited-action therapy as ammonium chloride, hormones, tranquilizers and potent diuretics. neo Bromth has continued to prove to be the safest—as well as the most effective—treatment for premenstrual tension.

Each 80 mg. tablet contains 50 mg. Pamabrom, and 30 mg. pyrilamine maleate. Dosage is 2 tablets twice daily (morning and night) beginning 5 to 7 days before menstruation. Discontinue when the flow starts.

BRAYTEN PHARMACEUTICAL COMPANY • Chattanooga 9, Tennessee

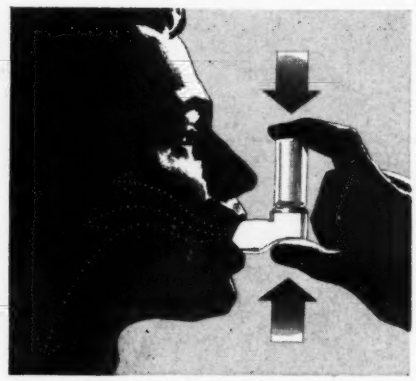
Optimal Asthma Relief

from smallest dosage...

in briefest time

Medihaler®

automatically controlled dosage by aerosol administration



22½% more vital capacity within seconds

The suspension of premicronized dry particles assures maximum delivery of the medication to the alveolar spaces where the therapeutic effect is exerted. The Medihaler suspension affords 5 times the bronchodilating power of the same medication in solution and approximately 20 times that of a squeeze bulb nebulizer.

Medihaler is available with either of the two outstanding bronchodilating agents:

Medihaler-ISO® (isoproterenol)

Medihaler-EPI® (epinephrine)

NEW! 30 cc size vial for office or home

Riker Northridge, California

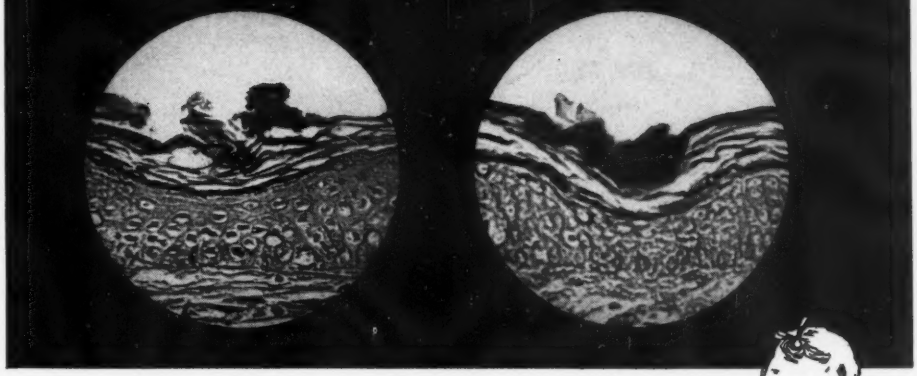
new study:

"almost universally rapidly curative"[1] *in*

infantile eczema

Biopsy section from skin stained with osmic acid after treatment for one week with placebo base shows little unsaturated oil (black stain) on the surface and practically none within the epidermis.

Biopsy section from skin stained with osmic acid after treatment with Desitin Ointment for one week shows much unsaturated oil (black stain) on the surface and also within the epidermis. Unsaturated oils are important constituents of natural emollients.



DESITIN® OINTMENT

restores unsaturates via fatty acids of external cod liver oil

Spoor finds[1] that Desitin Ointment topically replenishes unsaturated fatty acids dermally deficient[1-4] in many babies with infantile eczemas. Desitin Ointment was selected because its rich cod liver oil unsaturates resemble those naturally found in the skin.

Desitin plus antiallergenic therapy proved . . .
"almost universally rapidly curative", with great improvement or clearing of the condition in all babies in from one to five weeks.[1]

for **samples** of soothing, protective, healing Desitin Ointment and reprint, please write . . .

DESITIN CHEMICAL COMPANY
812 Branch Avenue, Providence 4, R. I.

1. Spoor, H. J.: New York St. J. M. 60:2863, 1960.
2. Wiese, H. F., et al.: J. Nutrition 66:345, 1958.
3. Smith, L. W., et al.: Amer. J. Med. Sc. 237:600, 1959.
4. Nutrition Reviews 17:136, 1959.

Bed of Digitalis purpurea
with Campanula (Canterbury Bells) in foreground

Not far from here are manufactured
from the powdered leaf
Pil. Digitalis (Davies, Rose)
0.1 Gram (1½ grains) or 1 U.S.P. Digitalis Unit.
They are physiologically standardized,
with an expiration date on each package.
Being Digitalis in its completeness,
this preparation comprises the
entire therapeutic value of the drug.
It provides the physician with a safe and effective
means of digitalizing the cardiac patient
and of maintaining the necessary saturation.
Security lies in prescribing the
"original bottle of 35 pills, Davies, Rose."

Clinical samples and literature sent to physicians on request

Davies, Rose & Co., Ltd. Boston 18, Mass.

D 27

"be sure to make up more **TRICHOTINE** solution for our examining room."

You can see for yourself the efficient detergent action of Trichotine solution in reducing promptly a cervical plug (using a saturated cotton pledget), or washing away the "cheesy" exudate of monilia.

TRICHOTINE is just as effective for therapeutic irrigation by your patient at home

The same qualities – detergency*, antisepsis, healing – make Trichotine ideal for the treatment of cervico-vaginitis and leukorrheas, alone or in conjunction with other antimicrobials. In the itching, burning, and foul odor of non-specific vaginitis and leukorrhea the action of Trichotine is immediate and gratifying to the patient.

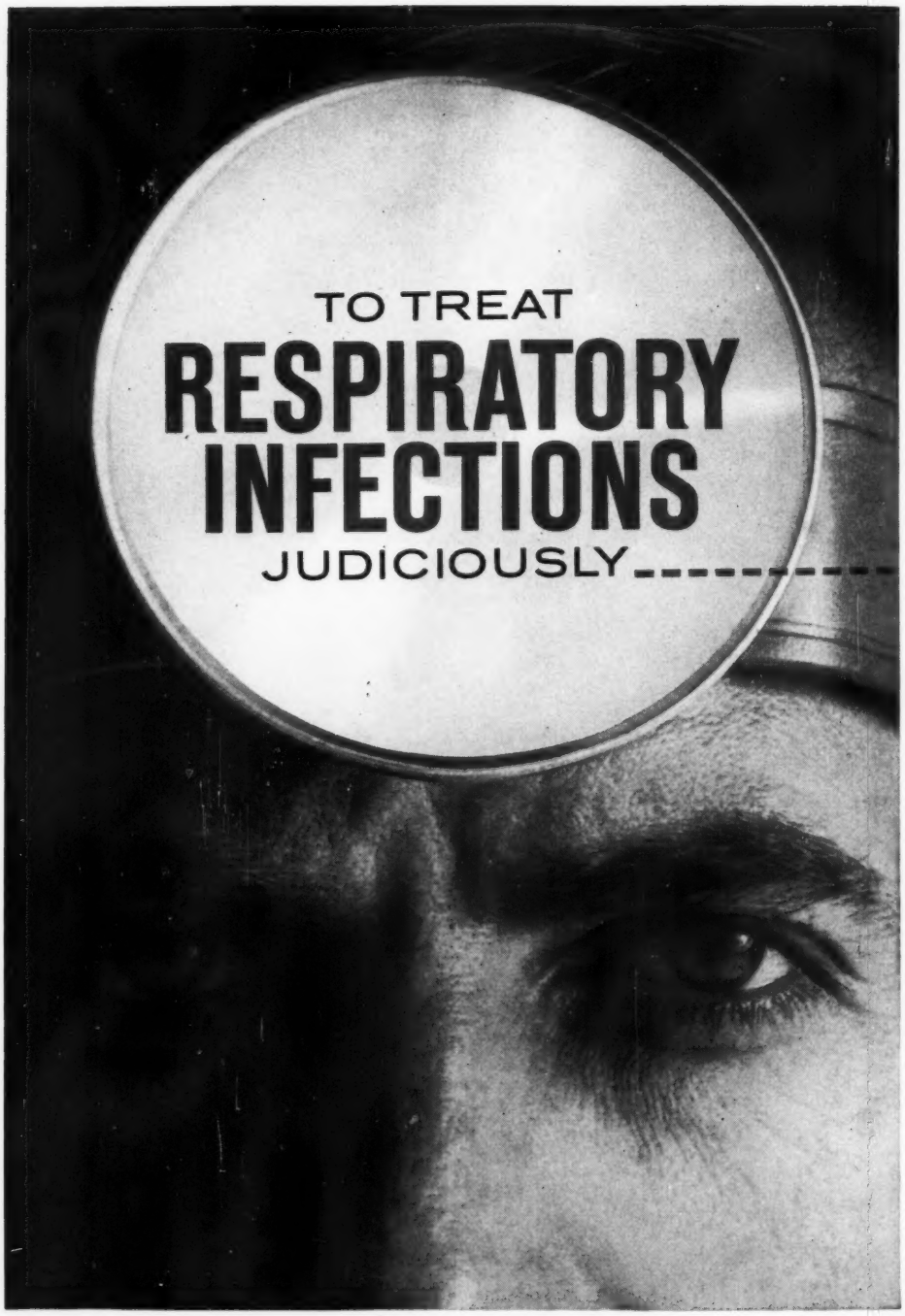
The more you expect of a douche, the more you will use Trichotine in the office and prescribe it for home irrigation, and recommend it as well for postmenstrual and postcoital hygiene.

*SURFACE TENSION: TRICHOTINE 34 DYNES; VINEGAR 60 DYNES; TAP WATER 70 DYNES.

The modern detergent douche

TRICHOTINE

THE FESLER COMPANY, INC. 375 Fairfield Avenue, Stamford, Conn.


TO TREAT
RESPIRATORY
INFECTIONS
JUDICIOUSLY

When it's penicillin-susceptible
and the patient is not allergic
Use an orally maximal penicillin

MAXIPEN®

potassium phenethicillin

Consistent dependable therapeutic response through maximal absorption, maximal serum concentration and longer duration of inhibitory antibiotic levels for less susceptible organisms.

Available as Maxipen Tablets, 125 mg. and 250 mg.; Maxipen for Oral Solution, 125 mg. per 5 cc. of reconstituted liquid.

Literature on request

---or---

When you hesitate to use penicillin
(eg. possible bacterial resistance or allergic patient)

You can count on

TAO®

triacetyloleandomycin

Extends the Gram-positive spectrum of usefulness to include many staphylococci resistant to one or more of the commonly used antibiotics—*narrows* the spectrum of side effects by avoiding many allergic reactions and changes in intestinal bacterial balance.

Available as Tao Capsules, 250 and 125 mg.; Tao Oral Suspension, 125 mg. per 5 cc.; Tao Pediatric Drops, 100 mg. per cc. of reconstituted liquid; Intramuscular or Intravenous as oleandomycin phosphate. Other Tao formulations also available: Tao®-AC (Tao, analgesic, antihistaminic compound) Tablets; Taomid® (Tao with Triple Sulfas) Tablets, Oral Suspension.

Literature on request

and for nutritional support **VITERRA®** vitamins and minerals
Formulated from Pfizer's line of fine pharmaceutical products

New York 17, N. Y., Division, Chas. Pfizer & Co., Inc.
Science for the World's Well-Being™

EFFECTIVE ANTIHISTAMINE-DECONGESTANT ACTION

COVANAMINE, a combination of TWO antihistamines and TWO decongestants, shrinks swollen turbinates, opens blocked ostia, promotes drainage, reestablishes patency — in the treatment of common colds, rhinitis, sinusitis, nasal allergies and post-nasal drip.

Constant therapeutic levels are maintained by COVANAMINE Sustained Action TABLETS which meter out the active ingredients, in combination, at a lower dosage . . . resulting in minimal side effects, particularly less drowsiness.

COVANAMINE(TM)

Sustained Action Tablets

Also available as:
COVANAMINE™ BLACK Cherry Flavored LIQUID
COVANAMINE™ EXPECTORANT with glyceryl guaiacolate

Each COVANAMINE Sustained Action TABLET (continuous release) contains:
Decongestants—phenylephrine HCl, 15 mg., phenylpropanolamine HCl, 25 mg.
Antihistamines—chlorpheniramine maleate, 4 mg., pyrilamine maleate, 25 mg.

Dosage: Adults — 1 tablet (swallowed without chewing) morning, mid-afternoon and at bedtime; Children, 6 to 12 years, ½ tablet. Children under six years, COVANAMINE LIQUID.

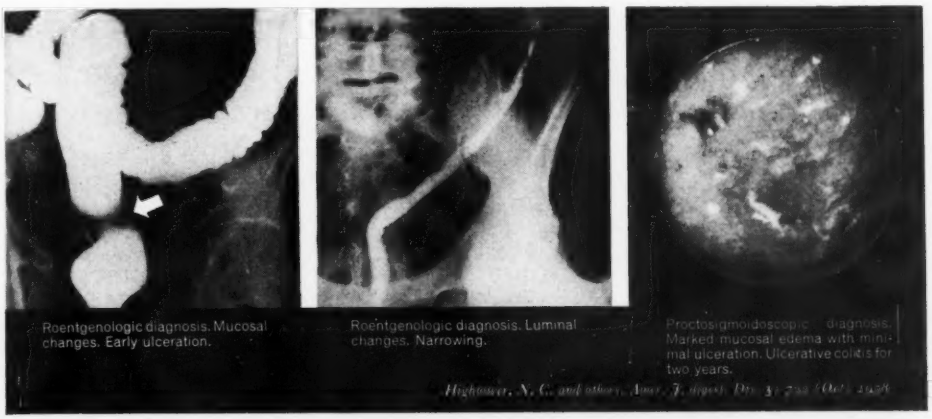
COVANAMINE LIQUID and COVANAMINE EXPECTORANT contain ¼ the tablet formula in each 5 ml. teaspoonful.
Decongestants—phenylephrine HCl, 3.75 mg., phenylpropanolamine HCl, 6.25 mg.
Antihistamines—chlorpheniramine maleate, 1 mg., pyrilamine maleate, 6.25 mg.

COVANAMINE EXPECTORANT also contains 100 mg. of glyceryl guaiacolate.
Dosage: Adults—2 teaspoonfuls every four hours. Children 6 to 12 years, 1 teaspoonful every four hours; 1 to 6 years, ½ teaspoonful every four hours; under 1 year, ¼ teaspoonful every four hours.

VANPELT AND BROWN, INC. Richmond, Virginia

ULCERATIVE COLITIS

1 Ulcerative Colitis is a difficult and distressing disease to treat. However, the outlook for the patient with chronic ulcerative colitis has been greatly improved since the introduction of the newer sulfonamides, such as Azulfidine, steroids, and antibiotics.



Roentgenologic diagnosis. Mucosal changes. Early ulceration.

Roentgenologic diagnosis. Luminal changes. Narrowing.

Proctosigmoidoscopic diagnosis. Marked mucosal edema with minimal ulceration. Ulcerative colitis for two years.

Highsmith, N. C. and others, Amer. J. Digest. Dis. 3: 734 (Oct.) 1936

DIAGNOSIS ● Important clinical symptoms include recurrent bloody diarrhea, rectal tenseness, abdominal cramps, anorexia, weight loss, dehydration and occasional fever. Hemoglobin is often below normal, and E.S.R. elevated. Alterations of the rectal mucosa may be apparent upon examination.

Early diagnosis increases the possibility of successful medical treatment. Proctosigmoidoscopy and roentgen examination are essential for making a definite diagnosis.

TREATMENT ● Azulfidine® Brand of Salicylazosulfapyridine

Azulfidine is the most widely accepted sulfonamide for the treatment of ulcerative colitis. Administration of Azulfidine produces rapid regression of the ulcerative and inflammatory lesions of the bowel. Remission or considerable improvement has occurred in 70 to 80 per cent of the patients treated. Azulfidine is safe for long term administration because its toxicity is extremely low and drug reactions are rare.

Film available on "The Early Detection and Medical Management of Chronic Ulcerative Colitis", 16 mm in sound and color, running 31 minutes. Address requests to Ideal Pictures Inc., 58 E. South Water Street, Chicago, Illinois.

Pharmacia Laboratories, Inc.

501 FIFTH AVENUE, NEW YORK, 17., N.Y.

The underlying causes of constipation are generally conceded to be atony of the bowel, biliary stasis, and the loss of excessive amounts of water from the stool.

Bile salts, the natural body laxative, increases the flow of hepatic bile, improving emulsification of fats and absorption of fat soluble vitamins.

A balanced combination of digestant, choleretic and stimulaxant ingredients can help to restore the normal pattern of elimination gently and physiologically.

The hydrotropic action insures the formation and passage of normal stools.

Stimulant laxatives effectively increase the muscular activity of the colon and promote return to regularity.

in other words..

Caroid and Bile Salts Tablets correct constipation physiologically by aiding protein digestion, increasing the flow of bile into the gut, and stimulating peristalsis. ℞ two tablets before retiring—One natural movement in the morning.

Caroid® & Bile Salts Tablets—digestant—choleretic—laxative.
American Ferment Division, Breon Laboratories Inc., New York 18, N.Y.

DECLOMYCIN®

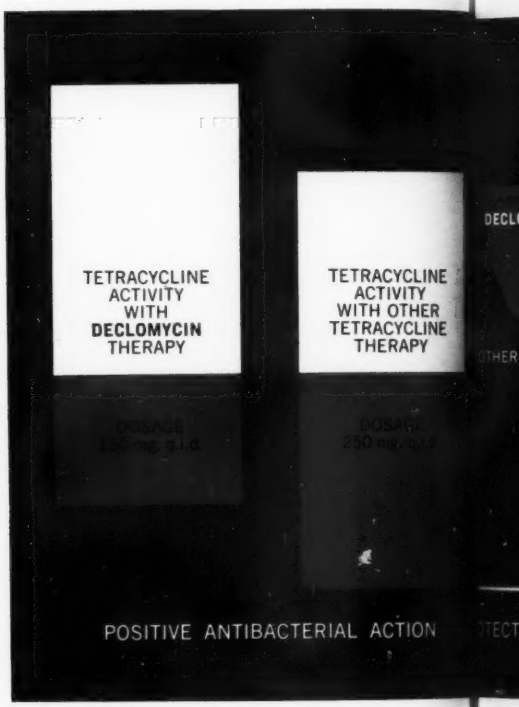
DEMETHYLCHLORTETRACYCLINE LEDERLE

attains
sustains
retains

extra
antibiotic
activity

extra-activity...promptly attained

DECLOMYCIN Demethylchlortetracycline a
tains—usually within two hours—blood leve
more than adequate to suppress susceptib
pathogens. These levels are attained in tissu
and body fluids on daily dosages substantial
lower than those required to elicit antibiot
activity of comparable intensity with other tet
cyclines. With other tetracyclines, the averag
effective, adult daily dose is 1 Gm. Wit
DECLOMYCIN Demethylchlortetracycline, it
only 600 mg.


TETRACYCLINE ACTIVITY WITH DECLOMYCIN THERAPY
TETRACYCLINE ACTIVITY WITH OTHER TETRACYCLINE THERAPY
POSITIVE ANTIBACTERIAL ACTION

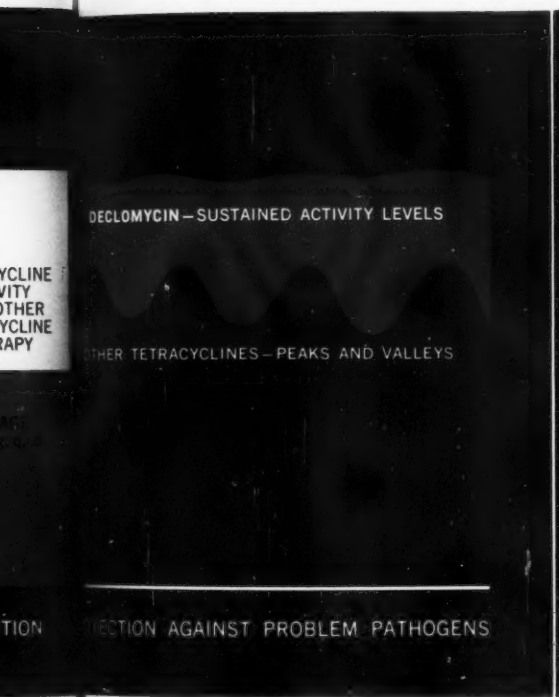
DECLO

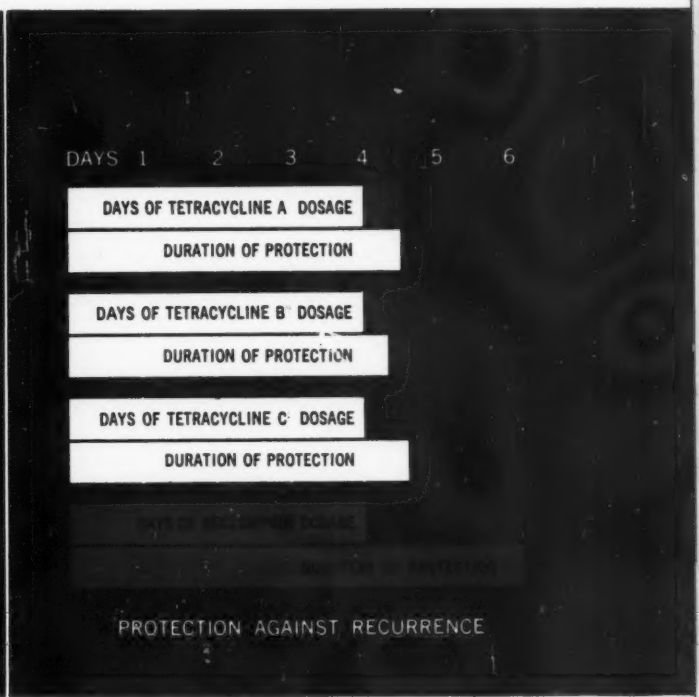
nevenly sustained

ycline a… ECLOMYCIN Demethylchlortetracycline sus-
ood leve…ns, through the entire therapeutic course, the
usceptib…gh activity levels needed to control the pri-
in tissu…ary infective process and to check the onset of
ostantial…complicating secondary infection at the orig-
antibiot…al—or at another—site. This combined thera-
ther tetr…utic action is sustained, in most instances,
e averag…thout the pronounced hour-to-hour, dose-to-
Gm. Wit…se, peak-and-valley fluctuations in activity
cline, it …vels which characterize other tetracyclines.

long retained

DECLOMYCIN Demethylchlortetracycline retains significant activity levels, up to 48 hours after the last dose is given. At least a full, extra day of positive antibacterial action may thus be confidently expected. One capsule four times a day, for the average adult in the average infection, is the same as with other tetracyclines—but the **total** dosage is lower and the duration of anti-infective action is longer.




DAYS 1 2 3 4 5 6
DAYS OF TETRACYCLINE A DOSAGE
DURATION OF PROTECTION
DAYS OF TETRACYCLINE B DOSAGE
DURATION OF PROTECTION
DAYS OF TETRACYCLINE C DOSAGE
DURATION OF PROTECTION
PROTECTION AGAINST RECURRENCE

MYCIN®

DEMETHYLCHLORTETRACYCLINE LEDERLE

- higher activity/intake ratio—positive antibacterial action
- sustained activity levels—protection against problem pathogens
- up to two extra days' activity—protection against recurrence

CAPSULES, 150 mg., bottles of 16 and 100. **Dosage:** Average infections—1 capsule four times daily. Severe infections—Initial dose of 2 capsules, then 1 capsule every six hours.

PEDIATRIC DROPS, 60 mg./cc. in 10 cc. bottle with calibrated, plastic dropper.

Dosage: 1 to 2 drops (3 to 6 mg.) per pound body weight per day—divided into 4 doses.

SYRUP, 75 mg./5 cc. teaspoonful (cherry-flavored), bottles of 2 and 16 fl. oz.

Dosage: 3 to 6 mg. per pound body weight per day—divided into 4 doses.

for the added measure of protection **in clinical practice**

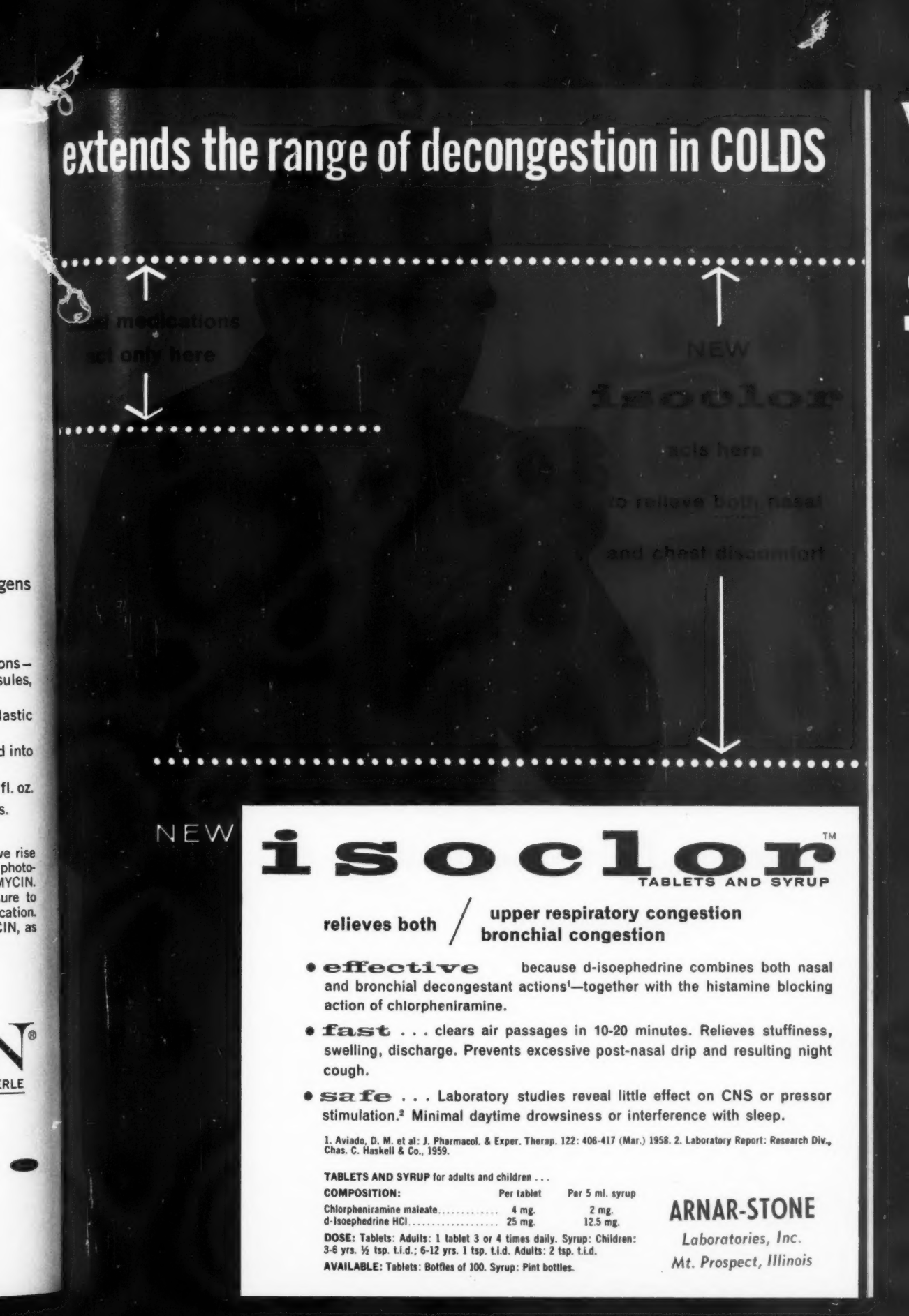
PRECAUTIONS: As with other antibiotics, DECLOMYCIN may occasionally give rise to glossitis, stomatitis, proctitis, nausea, diarrhea, vaginitis or dermatitis. A photodynamic reaction to sunlight has been observed in a few patients on DECLOMYCIN. Although reversible by discontinuing therapy, patients should avoid exposure to intense sunlight. If adverse reaction or idiosyncrasy occurs, discontinue medication.

Overgrowth of nonsusceptible organisms is a possibility with DECLOMYCIN, as with other antibiotics. The patient should be kept under observation.

DECLOMYCIN®

DEMETHYLCHLORTETRACYCLINE LEDERLE

LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY, Pearl River, New York



NEW

isoclor™

TABLETS AND SYRUP

relieves both / upper respiratory congestion bronchial congestion

- **effective** because d-isoephedrine combines both nasal and bronchial decongestant actions[1]—together with the histamine blocking action of chlorpheniramine.
- **fast** . . . clears air passages in 10-20 minutes. Relieves stuffiness, swelling, discharge. Prevents excessive post-nasal drip and resulting night cough.
- **safe** . . . Laboratory studies reveal little effect on CNS or pressor stimulation.[2] Minimal daytime drowsiness or interference with sleep.

1. Aviado, D. M. et al: J. Pharmacol. & Exper. Therap. 122: 406-417 (Mar.) 1958. 2. Laboratory Report: Research Div., Chas. C. Haskell & Co., 1959.

TABLETS AND SYRUP for adults and children . . .

COMPOSITION:	Per tablet	Per 5 ml. syrup
Chlorpheniramine maleate	4 mg.	2 mg.
d-Isoephedrine HCl	25 mg.	12.5 mg.

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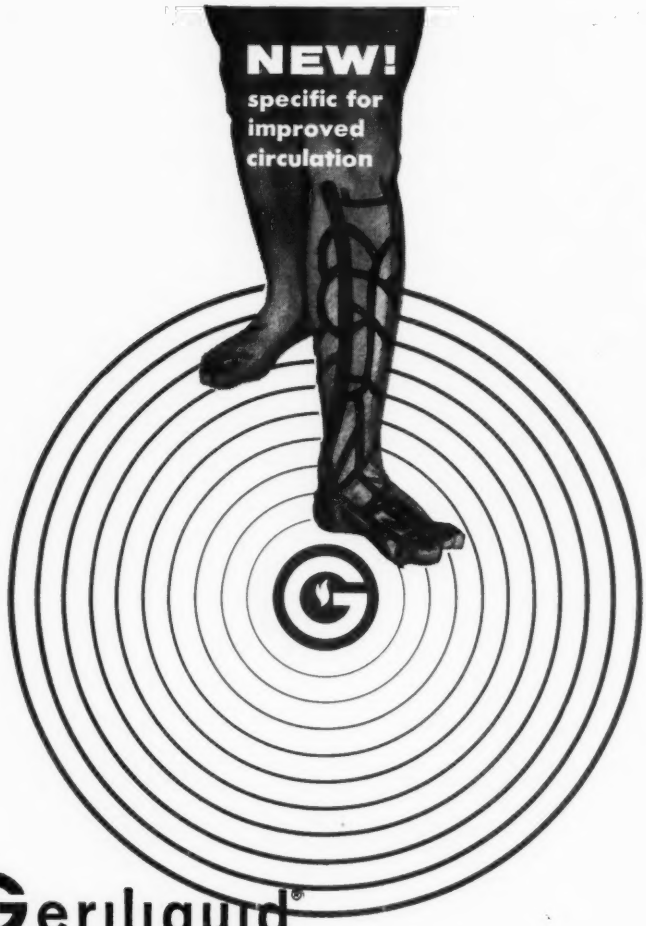

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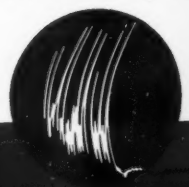

in vivo measurement of LUTR
on contracting uterine muscle

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Giant Cell Tumor of Bone*

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This offers an excellent review of the subject of giant cell tumor. Treatment is illustrated by the authors' series of cases.

GIANT CELL TUMORS have been reported as occurring in almost all bones and in patients of most age groups. It is estimated that 65% of giant cell tumors occur in the ends of long bones, particularly the lower femur, proximal tibia and distal radius, but the flat bones, including the skull and patella[1] may be involved. The sexes are affected equally, and the age of occurrence varies greatly, with the average age occurring in the twenties. The diagnosis of this tumor may be difficult, and all lesions with giant cells in them are not to be classified as true giant cell tumors. Histochemical tests have revealed no dependable consistent findings. For these reasons statistics concerning age of occurrence, location, and type of tumor are not necessarily accurate.

Nomenclature

Cooper and Travers,[2] in 1828, were the first to mention tumors which probably represented giant cell tumors. Lebert[2] first described the giant cell in 1845. Numerous names have been given this tumor.[3] Some of the confusion has been eliminated by excluding the "giant cell variants" that have histologic similarity but which represent separate and distinct entities. At present, the tumor under discussion is commonly known as giant cell tumor or osteoclastoma (British).

Etiology and Histogenesis

The etiology is unknown. Trauma has been mentioned as a contributing factor but the role of trauma is questionable.[4,5] Barrie[6] suggested that the tumor represents a chronic, nonsuppurative, hemorrhagic osteomyelitis. Mallory[7] thought the changes represent faulty repair. Bergstrand[7] considered the histogenesis to be a non-neoplastic process intimately associated with bone formation. Because of the similarity of the giant cell tumor and the bone lesions of hyperparathyroidism, Ewing[4] suggested a possible transitory disturbance of calcium metabolism mediated through parathormone. Leventhal and Kraft[5] implied that interference with blood supply may be of significance. Geschichter and Copeland[8] expressed the opinion that giant cell tumor results from an abnormal hyperplasia of osteoclasts preceded by a normal stage of osteoclastic proliferation in enchondral bone formation. They believe that giant cell tumor can arise only in bone that is preformed in cartilage. The concensus is that giant cell tumor represents a true neoplasm.

There are two views concerning the histogenesis of the giant cell tumor. The controversy about histogenesis has led to differences as to what represents a true giant cell tumor. One view holds that the tumor develops from nonbone-forming, undifferentiated cells of the marrow connective tissue which produce round and spindle-shaped stromal cells which coalesce to form the giant cell. Willis[3] pointed out that possibly the stromal cell potentially is able to differentiate

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The views presented in this paper are those of the authors and not of the United States Air Force.

into an osteoblast or an osteoclast, and that either is capable of interconversion. According to Johnson[9] this interconversion may amount to no more than slight alteration in the nature and quality of the enzyme content of the cells. Willis,[3] based on his theory of pluripotentiality of the stromal cell, believes that Codman's tumor represents a natural progression of the true giant cell tumor. Other investigators have held that the bone cyst represents a degenerative stage of giant cell tumor.[7,10]

The second view holds that this tumor arises from bone-forming cells. Two recent articles reported the presence of osteoid and bone formation in a fairly high percentage of cases of giant cell tumor.[11,12] That osteoid is not present in all giant cell tumors may be due to the fact that the osteoid is missed on histologic sectioning or that certain tumors do not produce osteoid. The reason for this is not known. When this subject is considered, the presence or absence of fracture at the periphery must be mentioned.

Investigation of the venous retention phase of arteriography indicates that lesions containing giant cells retain dye in direct proportion to the number of giant cells present, rather than in proportion to the vascularity as judged by the histologic examination.[13] Caldas[13] has shown that the giant cell has a marked affinity for thorium dioxide (Thorotrast) and proposed that the giant cells are phagocytes of reticuloendothelial origin.

With these points in mind, it is readily seen why the claims of Ellis,[14] who listed the mandible and maxilla as among the commonest locations for giant cell tumor, were contested by Jaffe,[15] who stated that giant cell tumor in these areas is exceedingly rare.

Diagnosis

The diagnosis of giant cell tumor should be based on the composite of symptoms and signs and pathologic and radiographic evidence. The clinical findings, in particular, have been emphasized by Jaffe, Lichtenstein, and Portis.[16] The pathologist will make a more accurate diagnosis if he is familiar with all features of the case in addition to the histologic examination. Although radiologic features are sufficiently typical in long bones for a suspicion of diagnosis, Manderville and Howe[17] pointed out that there is no infallible roentgen appearance of a giant cell tumor. This fact needs emphasis because Brailsford[18] stated that biopsy is both unnecessary and harmful and thought that diagnosis should be based on radiographic features alone. Most clinicians and other investigators disagree with this view (Figs. 1, A-E).

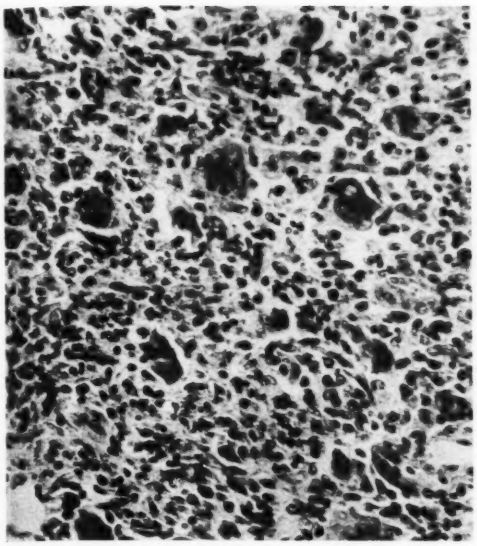
The most common roentgenographic changes are the expansion of cortical bone, often eccentrically, with sparing of the articular cartilage and a "soap bubble" trabecular pattern also referred to as "ground glass appearance." In long bones, typically, the giant cell tumor shows gradual complete involvement of the epiphyseal area. The lesion may originate in the metaphysis.[9,14,18,19]

Accurate diagnosis requires biopsy. The dangers of infection and weakening of the bone by biopsy are small in comparison with the risk of improper diagnosis. Needle biopsy is possible but histologic interpretation of the material may not be easy. If malignant changes are to be ruled out, material should be obtained from all areas of the tumor. This is done more accurately during an open biopsy

FIG. 1, A

Distal femur with extensive lesion already broken through the cortex in several areas. Originally thought to be osteogenic sarcoma and treated by roentgen therapy prior to biopsy.

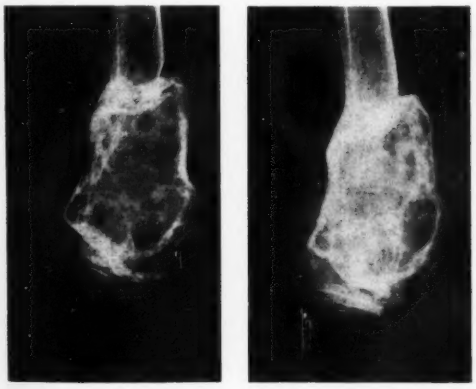
FIG. 1, B



Biopsy taken about 3 months following roentgen therapy showed giant cell tumor.

than by trocar or needle biopsy. The microscopic appearance shows giant cells typically occurring in varying size and number. Inflammatory or degenerative changes often mask the usual stromal cell pattern of round or spindle cells. The stromal characteristics best reflect the character of the tumor, although the character of the giant cells may be helpful in ascertaining the aggressiveness of the tumor.[16,20] Stromal pleomorphism, hyperchromatism, and increased cellularity reflect aggressiveness.[20] In aggressive lesions, the giant cells are generally smaller, contain mitotic figures in the nucleus, but have fewer nuclei per cell. Murphy and Ackerman[11] held that mitotic figures in the giant cells, with associated stromal cell changes, are the best indications of aggressiveness. A tendency for the giant cell cytoplasmic border to become less distinct in aggressive tumors has been reported.[11] Osteoid may be present in some tumors.[11,12,16] Gilmer[21] has studied a variety of tumors by histochemical staining for acid and alkaline phosphatase. His results are summarized in table 1. Schajowicz and Cabrini[22] found no strong enzymatic activity in giant cell tumors and stated that the only alkaline phosphatase activity is perivascular and that the giant cells, fibroblastic, and reticulohistocytic stromal cells react weakly to alkaline phosphatase stains after 24 hours. These authors suggest that alkaline phosphatase histochemical stains might be used to distinguish between the areas of hyaline change and true osteoid, since the latter would show phosphatase activity. More work in the field of histochemical staining may offer much in the classification of these tumors.

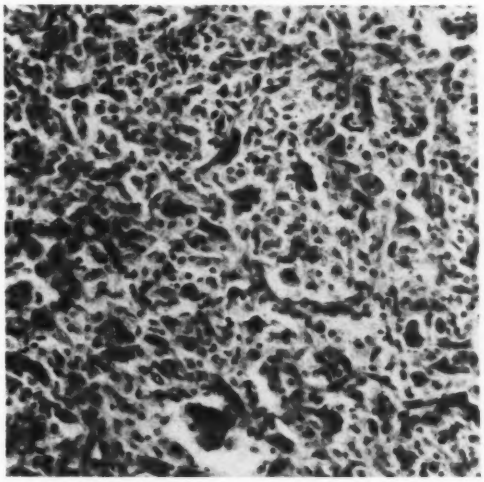
FIG. 1, C and D



C D

(C) Appearance of distal femur about 8 months following roentgen therapy. Pain had diminished, motion of knee still limited, nonweight-bearing. Because of improvement patient did not desire resection or amputation. (D) Shows the lesion approximately 2 years later, at which time the patient noted increased pain, swelling and tenderness. There is change in bone architecture in the central and peripheral portions of the tumor.

FIG. 1, E



Biopsy at this time shows considerable change in the stroma, giant cells, and the histologic appearance was that of a disorganized lesion resembling a malignant giant cell tumor. High thigh amputation was done (Case 4, Table 2).

Treatment

The treatment for giant cell tumor prior to 1910 was by amputation, no treatment, or occasionally by roentgen therapy. Pfahler[23] is said to have treated the first giant cell tumor by roentgen therapy in 1906. Bloodgood's[24] report in 1924, of cure following curettage and grafting popularized this form of treatment. Herendeen,[25] in 1931, and Ewing,[4] in 1939, advocated roentgen therapy again and reported cures with this form of therapy. Application of radium was advocated but, because of severe osteitis and subsequent osteomyelitis, was abandoned.[26] Brailsford,[27] Ellis[14] and Willis[3] generally advocated roentgen therapy. The question of treatment is not answered today and the efficacy of radiotherapy has not been clearly determined. It is our opinion that radiotherapy should be avoided entirely if other adequate and reliable therapy is possible. The accumulated information relative to radiotherapy is not entirely accurate because many persons reported as cured did not have biopsy prior to treatment. Of Prosser's[2] 25 patients treated by roentgen therapy, only 10 had a histologic diagnosis. Ellis[14] reported 21 cases, 9 of which were in the mandible or maxilla, treated by roentgen therapy. It would be unusual if these were all giant cell tumors. Pfahler and Perry[23] reported 26 patients treated by roentgen therapy, of whom 27% were under the age of fifteen. This many tumors appearing before closure of the epiphyses and being classified as true giant cell tumor are certainly open to question, based on present day experience. These authors stated that, of their 26 cases treated, no patient failed to obtain improvement, though long-term follow-up observation was not available and the definition of improvement is somewhat vague. Buschke and Cantril[28] indicated that the previously reported surgical recurrence rate of 30% following curettage was far higher than that in adequately treated patients with giant cell tumor in their group. Again, the 30% figure indicating a high recurrence rate probably indicates incomplete removal at the initial procedure. Dahlin and his colleagues[29] stated that the results in 101 cases reviewed indicate that radiation did not reduce the incidence of recurrence or persistence of giant cell tumor and their histologic evidence was sound. We could find no recent article adequately documented with 5 year follow-up after treatment of known giant cell tumor with roentgen therapy. It seems reasonable, then, to adopt the attitude that the hazards of roentgen therapy outweigh the advantages, if another method of treatment is available which will give a low recurrence rate. Furthermore, in addition to the fact that there was incomplete microscopic information in the groups treated by roentgen therapy, those specifically treated had no standard x-ray dosage. Fractional treatment may avoid osteitis but may be stimulating to tumor growth.[23] Ellis[14] suggested the use of a total dosage of 3,000 r given in fractional doses every other day, or over a 3 week period, as a satisfactory technic. Windeyer and Woodyatt[30] recommended 2,000 to 3,000 r given over a period of 30 days, followed by a second course in 3 months. 6,000 r may be considered as a dose

TABLE 1

SPECIAL STAINS AS AN AID TO DIAGNOSIS*

	Acid Phosphatase		*Alkaline Phosphatase*	
	Stromal Cells	*Giant Cells*	*Stromal Cells*	*Giant Cells*
Giant cell tumor	Present	Present	None	None
Non-osteogenic fibroma	None	Present	Present	None
Solitary bone cyst	None	Present	Present	None
Osteogenic fibroma	None	Present	Present	None
Fibrous dysplasia	None	Present	Present	None
Fibrosarcoma	None	None	None	None
Osteogenic sarcoma	None	None	Present	Present
Metastatic (besides prostate)	None	None	Present	Present

The Gomori technic was used. Prior to decalcification, the tissue is fixed in alcohol or acetone. Formalin should not be used. If decalcification of the sections is to be delayed, the tumor material may be refrigerated at 30° C. Chelating agents, which reportedly do not appear to interfere with enzyme content, may shorten the decalcifying time.

*(After Gilmer[21]) Additional aid in diagnosis may be obtained by special staining technics to bring out the presence or absence of acid or alkaline phosphatase in the tumor tissue. This technic has been used in our more recent cases but not in the older ones.

which might stimulate malignant tumor formation, particularly when given over an area where a primary tumor is already present. Advocates of roentgen therapy have no large, accurately diagnosed, standardized series to support their claims. Furthermore, if roentgen therapy is to be used, the potential danger of malignancy stimulated by the use of irradiation must be considered. Cahan and his colleagues[31] reported 11 patients with osteogenic sarcoma developing in an average latent period of 11.2 years following roentgen therapy for a variety of lesions. Suggested criteria for cases of postirradiation sarcoma are:[32]

1. Microscopic and x-ray evidence of the benign nature of the original lesion.

2. Sarcoma arising directly in the irradiated area.

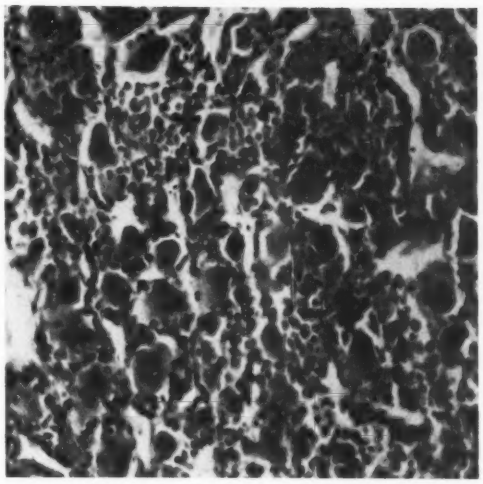
3. A relatively long symptom-free latent period.

4. Histologic proof of initial absence of sarcoma, followed by appearance of the sarcoma. Sabanas and associates[33] stated that there is increasing evidence that irradiation in large doses is capable of producing sarcomatous change in giant cell tumor. Of their 101 cases of giant cell tumor, 2 showed malignant change without other types of previous treatment. Eight cases of malignancy were seen, however, following roentgen therapy. It might be argued that the malignant change in irradiated giant cell tumor is inherent in the tumor itself. But sarcoma arising from nonneoplastic conditions with irradiation have been reported by numerous authors.[15,31-36]

FIG. 2, A

Sacrum in 1953,—all bone detail absent, large soft tissue swelling evident, cortex of sacrum not clearly seen and tumor had broken through the confines of the sacrum. Bowel and bladder dysfunction due to pressure on sacral nerves.

FIG. 2, B



Biopsy in 1953 showed giant cell tumor, Grade 2, no osteoid nor evidence of malignancy. Lesion considered to be nonaccessible surgically and treated by a total of 5,000 r in two divided doses. In retrospect, partial excision might have been attempted with large quantities of blood available for replacement.

FIG. 2, C

Sacrum in 1958 with several areas of calcification and ossification superiorly, but areas of decreased density and soft tissue swelling inferiorly. Attempted resection may still be advisable and patient is under close observation. This situation might best be managed by the minimal amount of roentgen therapy that would cause the tumor to recede, followed by a planned resection, at the appropriate time (Case 6, Table 2).

FIG. 3, A

Giant cell tumor involving the entire capitellum with invasion of posterior cortex. At the time of biopsy, complete excision done because of involvement of the articular cartilage and soft tissue extension. The ulnar nerve was transplanted anteriorly later because of fibrosis proximal to the olecranon groove. The radial nerve was not involved.

Thus, roentgen therapy in large doses is potentially dangerous in the treatment of giant cell tumor, as well as in the treatment of other bone tumors.

The concensus is that roentgen therapy should be considered for those patients with lesions inaccessible to surgery (Figs. 2, A-C). The number of lesions that are inaccessible has diminished considerably during the past 15 years, because of improved anesthesia, ease of blood replacement and a bolder approach to such areas as the vertebral bodies in all segments of the spine. If roentgen therapy is decided upon, the dose should be the minimum necessary to cause regression of the lesion (less than 3,000 r). Herendeen,[25] in 1931, pointed out that, during the first 6 to 8 weeks following irradiation, the size of the tumor may show an apparent increase in size and bone involvement. Unless this "reaction" is kept in mind, false interpretation may lead to amputation or additional roentgen therapy. Theoretically, in certain lesions, roentgen therapy might be used in total dosage adequate to decrease size of the tumor and decrease possibilities of hemorrhage. This would include: (1) lesions involving the proximal end of the tibia with invasion of the articular cartilage; (2) involvement of the distal end of the femur with complete loss of peripheral support, the tumor extending up to the articular cartilage or the femoral side of the hip joint; or (3) the tibial side of the ankle joint. Several weeks following roentgen therapy, a planned excision might be accomplished with complete removal of the tumor, if possible, supplemented by bone grafting. This program has not been followed in any of the patients in our series and none of the articles reviewed emphasize this plan in particular.

FIG. 3, B

Same area almost a year later, without evidence of recurrence, but with moderate discomfort, about 20% limitation of joint motion but good pronation and supination (Case 15, Table 2).

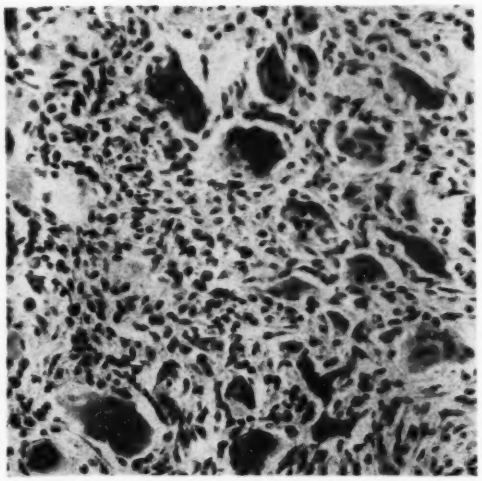
Surgical Treatment

Curettage, with or without chemical cautery with phenol or Zenker's solution, and with or without bone graft, is still a popular treatment for giant cell tumor. Certain authors believe that cautery causes osteitis and delays healing.[2,39] Others believe the use of a chemi-

FIG. 4, A

Giant cell tumor, lower tibia, with expansion through cortex with involvement of ankle joint. Pain, swelling, inability to bear weight. Because of extensive involvement, age of patient, and location, primary amputation was elected.

FIG. 4, B



Biopsy showed active aggressive lesion but no specific evidence of malignancy (Case 5, Table 2).

cal will eliminate the segments of tumor which cannot be removed with instruments or suction. Statistics are unavailable to support or reject the use of cautery. Practically, it is not always possible to use the cautery because of the location of the tumor. If a tourniquet can be placed, cautery may be used, but if this is not possible extensive bleeding usually occurs. If the lesion is a large one the use of a tourniquet is precluded. Lesions treated by curettage only have been reported as indicating that at least a third of the patients have had incomplete removal or recurrence. This high percentage indicates the necessity for a method which gives more complete removal.

Total excision of the tumor seems to offer the best chance of cure, with complete or at least partial preservation of function[37-40] (Figs. 3, A and B). Geschichter and Copeland[8] state that in their experience no giant cell tumor has recurred following complete primary resection or amputation. Various methods for accomplishing complete removal of the bone lesion have been described. Each tumor presents a particular problem, depending on its anatomic location, excluding the histologic appearance. The benign uncomplicated lesion should be excised completely if possible, and a bone graft be used to aid replacement of the defect. Amputation should not be considered in this type of tumor. In

FIG. 5, A

Upper x-ray shows appearance of mid-dorsal vertebrae in September 1953, with extension of tumor past the periphery of the involved vertebra and anteriorly, compression of the vertebra and narrowing of the interspaces above and below.

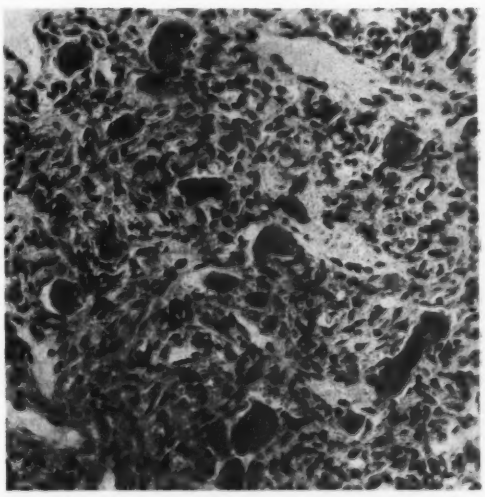
the highly aggressive, obviously malignant, or hopeless recurrent tumor, amputation or disarticulation is the treatment of choice.

Buschke and Cantril[28] stated that a combination of curettage and irradiation is contraindicated, because it appeared to enhance the possibility of malignant development and also complicated bone healing. Other authors present evidence in agreement with this opinion.[33,41-43]

Prognosis

There are no absolute methods for determining either the local progress of a giant cell

FIG. 5, B



Biopsy at the time of laminectomy. Clinical impression had been sarcoma or carcinoma, but the histologic section shows giant cell tumor classified as Grade 2 with no osteoid and without evidence of malignancy, although the stroma is somewhat irregular.

TABLE 2

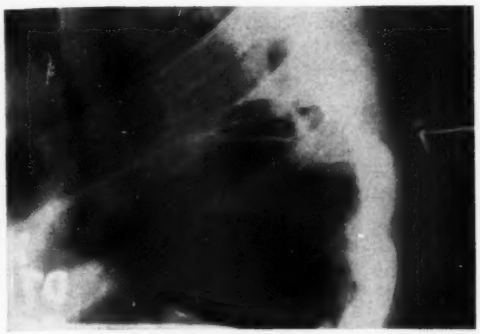
SUMMARY OF PATIENTS WHO HAD PROVEN GIANT CELL TUMOR

Case	*Sex-Age*	*Area*	*First Seen*	*Biopsy*	*Original Path. G-cT.*	*Treatment*	*Follow-up*
1.	F/43 L. B.	Scapula	4-36	With fore-quarter resection June 1943	Grade 2-3, osteoid in small amounts in 1943	X-ray therapy 1930 of unknown amount 1,750 r to 2 ports, Oct. '42. Forequarter resection in two stages, June 1943	Thoracotomy for metastasis in Aug., '47. Pathologically then osteogenic sarcoma. Died Dec. '47
2.	M/32 G. H. Fig. 9 (A-D)	Distal femur	2-45	At curettement 1945, Duke	Grade 2, no osteoid	Curettement twice elsewhere in 1943. Recuretted for osteomyelitis and (?) residual tumor, Feb., '45	Continued to drain. More pain in '56 with thigh amputation. Fibrosarcoma on section. Lung metastasis, Jan. '59
3.	F/30 A. G. Fig. 6	Distal radius	12-45	At resection	Grade 1-2, fibrosis, no osteoid	Resection, fibular graft, Dec. '45	No recurrence, Dec. '59. Good function
4.	F/20 V. B. Fig. 1 (A-E)	Distal femur	4-46	Open June '46	Grade 2, fibrosis, no osteoid	2,600 r in April '46 for suspected osteogenic sarcoma. Improved for 2 yrs. Pain increased Feb. '49, thigh amputated. Path. then showed Grade 3 lesion with muscle infiltration	No metastasis or local recurrence when last seen in April '54
5.	F/32 M. C. Fig. 4 (A & B)	Distal tibia, extensive	10-52	At amputation	Aggressive, Grade 2-3	October '52, below knee amputation	No follow-up
6.	F/14 D. C. Fig. 2 (A-C)	Entire sacrum (bladder and bowel dysfunction)	7-53	Open July '53	Grade 2, no osteoid, confirmed by AFIP	1,500 r Aug. '53 1,500 r Jan. '54	No recurrence, July '58. Bowel, bladder normal
7.	F/29 M. G. Fig. 5 (A-C)	Dorsal vertebra	9-53	Open Sept. '53	Grade 2, no osteoid, confirmed by AFIP	1,750 r Oct. '53. Fusion Feb. '54	No recurrence, Jan. '58
8.	F/24 M. H.	Cervical vertebra	5-54	Open pharyngeal	Grade 2, no osteoid	Irradiation of unknown amount June '54. Fusion, Dec. '54. X-ray for recurrence March '55	Died with paraplegia July '53 Autopsy (?)
9.	F/15 D. O. Fig. 6	Distal radius	5-55	Open May '55	Grade 2, no osteoid, infiltration soft tissues	Resection, fibular graft June '55	No recurrence Aug. '58
10.	F/37 D. B. Fig. 8 (A-C)	Proximal tibia	9-55	Open Sept. '55	Grade 2, small amounts of osteoid, diagnosis confirmed by AFIP	Curettage Sept. '55. Recurrence Oct. '56, recurettement with osteomyelitis, postoperative curettement for osteomyelitis, Jan. '58. No tumor cells seen	Well—Feb. '58
11.	F/41 H. F.	Proximal tibia	2-56	At curettage	Grade 2, no osteoid	Curettement, rib grafts Feb. '56	No recurrence, April '58
12.	F/39 T. M.	Proximal tibia	3-56	At curettement	Grade 1, no osteoid	Curettement and grafts March '56	X-ray negative, May '58
13.	F/16 E. B.	Proximal tibia	3-56	Open March '56	Grade 2-3, infiltrating muscles	AK amputation April '56, after soft tissue infiltration and hemorrhage	No recurrence when last seen May '59
14.	F/17 D. W. Fig. 7 (A-B)	Ilium pubis acetabulum	12-57	Open Dec. '57	Grade 1, no osteoid, confirmed by AFIP	Curettement with grafts (remaining ilium) in 2 stages, Dec. '57, Feb. '58	No recurrence, Aug. '60
15.	M/47 Fig. 3 (A-B)	Capitellum humerus	7-58	At resection	Grade 2, no osteoid	Excision of capitellum, bone grafts	No recurrence, March, July '60
16.*	F/42	10th dorsal vertebra	6-60 (lesion known to have been present for at least one year)	6-60	Giant cell tumor	Two stage partial resection, posterolateral approach	

*Case 16 is summarized but follow-up is not adequate for full presentation.

tumor or the ability of the tumor to metastasize. The pathologist attempts to grade the material given to him to indicate his suspicions. Certain pathologists[4,11,16,17,44] find grading useful, while others[3,29,37,45-47] believe it to be useless. Lesions that appear to be benign by all criteria have been reported as eventually metastasizing. There is no con-

FIG. 5, C



Same area 3 years following open biopsy with no attempt at removal of the vertebral body; 1,750 r had been given and spinal fusion posteriorly had been done. The interspace had collapsed. There appears to be anterior fusion following the previous protrusion of tumor in this region. A hemorrhagic or tumor area has become calcified and, at least partially, ossified. The patient had no complaints in 1960 (Case 7, Table 2). (Courtesy of Dr. John Glasson.)

clusive evidence, however, that a locally or distant malignant giant cell tumor resulted from a misdiagnosed benign lesion, injudicious treatment of a benign lesion or malignant transformation. Furthermore, cortical perforation by the tumor, as well as growth into soft tissues following biopsy, can occur in benign as well as in malignant lesions[10,11] (Figs. 4, A and B). Intravascular cells, grossly or microscopically, appear to have no prognostic significance.[11,48] The presence of local recurrence and spread across the joint space is not necessarily indicative of the malignancy. Osteoid in the stroma carries no prognostic value.[11,12] The roentgenologic appearance cannot be relied upon to distinguish between benign and malignant giant cell tumor.[49] The apparent high percentage of recurrence in all series must be taken seriously, but in many groups the original diagnosis is open to question and the statistics are not always accurate.

Review of Case Material

The patients observed at the Duke Medical Center and treated through 1958 are summarized in table 2. Two additional patients treated during 1959-60 are not included. No patients with maxillary or mandibular lesions have been included. All patients listed in the table received some portion of their treatment at the Duke Center, but many physicians have been involved in the initial and subsequent diagnosis and treatment. The age incidence ranged from 14 to 47 with no proven case occurring prior to closure of the epiphyses. Females predominated 12 to three. Fourteen of the 16 patients were white and 2 were Negro. Pain, with or without swelling, was the most common presenting symptom. A history of injury was obtained in only one patient. The proximal tibia was the site most frequently involved.

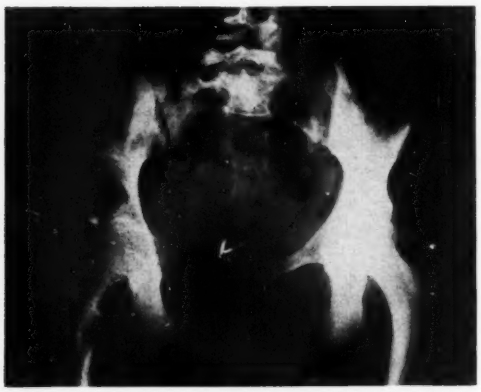
FIG. 6

Giant cell tumor, distal radius, with expansion down to and involving radial carpal joint, as well as radial ulnar joint. Resection done in 1945, removing the entire distal radius and a portion of the diaphysis. Lower x-ray in 1958 shows condition of fibular bone graft, which had been inserted in 1945 to replace the resected distal radius. Pronation and supination were absent and there was 15° painless motion at the intercarpal joints, with arthrofibrosis at the radial carpal joint (Case 3, Table 2).

Summary of Treatment:

1. Roentgen therapy. Five patients, following biopsy, were treated initially by roentgen therapy. Of these, one had a tumor in the cervical spine and died as a result of paraplegia due to vertebral collapse and con-

FIG. 7, A



Large destructive tumor involving the pubis, ischium, ilium, with a large intrapelvic soft tissue expansion of tumor. At biopsy the gross appearance resembled a giant cell tumor; partial excision was done at the initial stage. Frozen section at this time with the gross appearance warranted at least partial excision. Blood loss required six pints of blood in a 30 minute period. Permanent sections showed the giant cell tumor without evidence of malignancy. In February 1958, a second stage procedure consisted of more extensive curettage of the pubic ramus and ilium, with bone grafting of the acetabulum with bone removed from the uninvolved portion of the posterior-superior ilium. Blood loss at the second stage was not as rapid nor as much as previously.

tinued growth of the tumor in spite of repeated x-ray therapy and external and internal stabilization of the cervical vertebra.[50] Another patient had an extensive recurrence 3 years following initial treatment with x-ray and amputation was necessary. A third individual with a scapular tumor had radiotherapy of an unknown amount in 1930. There was no further treatment until 1943, when another course of x-ray therapy was given, followed by resection of the shoulder girdle. The patient died 4 years later with lung metastasis. In 1943, a review of the surgical specimen showed small amounts of osteoid within a general grade II giant cell stroma. The lung metastasis in 1947 was diagnosed as osteogenic sarcoma. Though slides from the original tumor in 1930 are unavailable, this case is included, but with insufficient evidence as to the final diagnosis. Was this originally an osteogenic sarcoma? This is not likely because of such a long-term cure. Was this a tumor that became malignant secondary to radiotherapy? The remaining 2, of the total of 5, are well, four and a half years following primary roentgen therapy (Figs. 5, A-C).

2. *Resection.* Two patients with in-

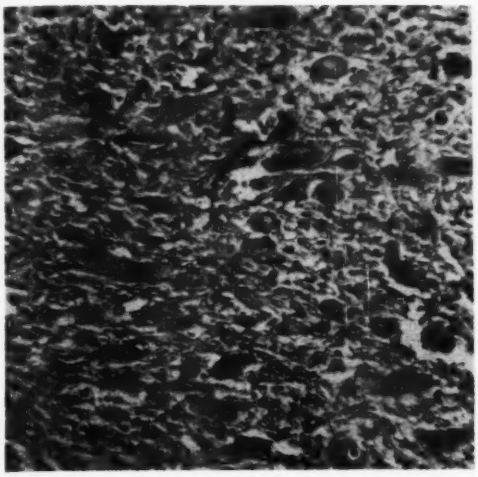
FIG. 7, B

Film made in March 1959, 1½ years following the primary procedure. More recent studies show the decreased density in the ischium to be calcifying and ossifying. The present range of hip motion is 80° of painless flexion, without rotation. There is a hip limp but a satisfactory gait; she carries out ordinary "teen age" activities, excluding athletics. Roentgen therapy was not used and the result to date indicates that it was not necessary or advisable (Case 14, Table 2).

FIG. 8, A

Large expanding lesion, proximal tibia, with invasion of anterior tibial cortex. Biopsy in 1955 showed a Grade 2 giant cell tumor with small amounts of osteoid. As much of the tumor as possible was removed without bone grafting. This was repeated in October 1956; this was followed by osteomyelitis.

FIG. 8, B

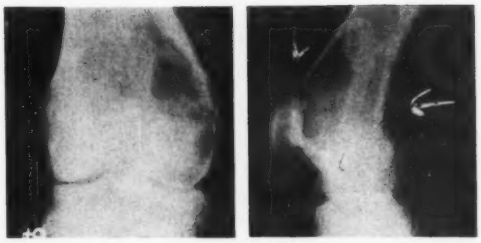


Histologic appearance of tumor following initial partial removal of tumor. Stroma is moderately irregular with no evidence of malignancy.

FIG. 8, C

Shows increased density and decreased density with bone abscess and changes secondary to chronic osteomyelitis. Patient last seen in August 1959, when there was no evidence of tumor, pain, nor drainage (Case 10, Table 2).

FIG. 9, A

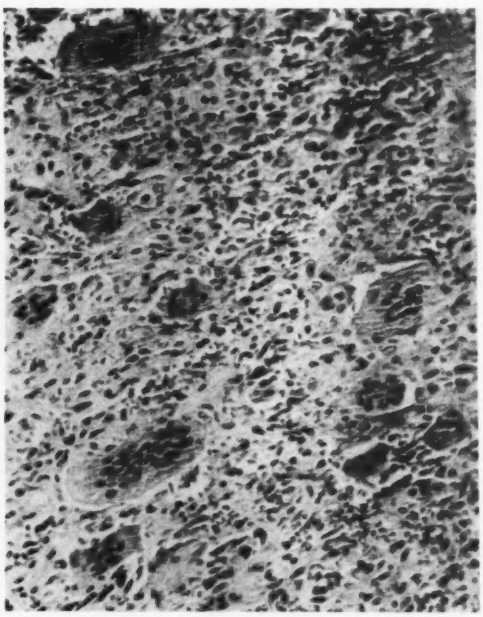


Destructive lesion of distal femur in 1945.

volvement of the distal radius had resection followed by application of an autogenous fibular bone graft (Fig. 6). There has been no recurrence during a 2 and a 13 year period respectively. A third patient had resection of the humeral capitellum in conjunction with addition of small homogenous bone graft in July of 1958. There is no evidence of recurrence at the end of 2 years and no enlargement of soft tissues (Figs. 3, A and B).

3. Curettage. Of 5 patients treated initially with curettage, 3 have shown no recurrence, one has been lost to follow-up and one had died (Figs. 7 and 8). The patient who died

FIG. 9, B



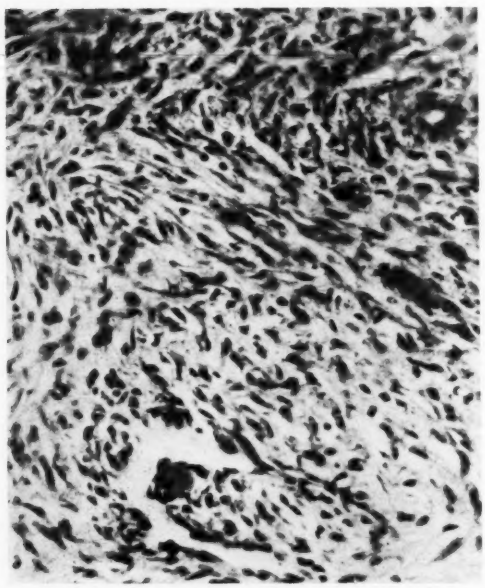
Biopsy in 1945 showed large giant cells with irregular stroma, classified as moderately aggressive, Grade 2, with no direct evidence of malignancy.

FIG. 9, C

Femoral lesion in 1954, AP view only, with considerable extension of tumor centrally as well as peripherally. Infection had persisted for 10 years. Amputation done in 1956. Lung metastasis in 1959.

was treated elsewhere in 1943 for a distal femoral lesion, initially reported as giant cell tumor (Figs. 9, A-D). The patient was seen at the Duke Center for the first time in 1945, and treatment included another curettement as well as excision of the patella. The patient did well but developed osteomyelitis; saucerization of the lesion in 1954 revealed no neoplastic tissue in the section. In July of 1956, at another hospital, because of pain and x-ray evidence of continued growth of the lesion, an amputation was done above the knee. Microscopic material confirmed the final diagnosis of fibrosarcoma. In January 1959, the patient was reported to have lung metastasis upon x-ray examination.

FIG. 9, D



Biopsy in 1955, compatible with fibrosarcoma (Case 2, Table 2).

TABLE 3

SUMMARY OF TREATMENT AND FOLLOW-UP

Duke Center Cases 16 Patients 18 Years	*Number of Cases*
1. More than one operation for treatment	9
2. Amputated early	2
3. Amputated late	3
4. Metastases to lung, femur, scapula	2
5. Died—treated by x-ray	2
6. Still followed, x-ray treatment	2
7. Still followed, after operation:	
Less five years	10
Greater five years	2

4. Primary amputation. Both of the patients treated by amputation showed no evidence of recurrence for 2 years (Figs. 4, A and B). One has been lost to follow-up and the other was last seen several months ago at which time he had no difficulty.

See Table 3 for summary of treatment and follow-up.

Discussion

This review of giant cell tumor, like others, stimulates many unanswered questions:

1. What causes the giant cell tumor?
2. When in long bones, why is the involvement confined to the ends?
3. What is the true histochemical nature of the giant cells and the stroma cells?
4. What, if any, is the roll of osteoid production in these tumors?
5. Are there criteria for accurately predicting a malignant tendency?
6. Is roentgen therapy indicated or not? If indicated, what are the particular circumstances?
7. Is chemical or electrical cautery of value in the surgical treatment?
8. What is the true recurrence rate of this neoplasm?
9. Should the goal of surgical treatment be total excision?

Summary

From this group of 16 patients treated by various methods no definite conclusions are drawn. Certain impressions, however, are legitimate:

1. There was no absolute correlation between the microscopic characteristics of the initial lesion and the eventual clinical outcome.

2. Neither osteoid nor bone formation were prominent in the cases reviewed.

3. Histologic diagnosis is a difficult matter, particularly with reference to grading and whether or not the lesion is benign and invasive, or invasive because of malignancy.

4. Complete resection or amputation seemed to give the best result, but amputation is not recommended unless there is obvious malignancy, extensive involvement of joint surface with a rapidly growing tumor, or other complication such as hemorrhage which, in combination with other criteria, makes amputation the most desirable treatment.

5. Very few lesions are inaccessible. Vertebral lesions, large lesions of the pelvis, and tumors located anywhere in the extremity are approachable and at least potentially resectable.

6. Any giant cell tumor that cannot be removed under control by a tourniquet should be operated upon only if large quantities of blood are available in the operating room for immediate and rapid replacement. Large tumors may have to be removed in stages.

7. Roentgen therapy is still an "unknown quantity," so far as end result is concerned.

A complete list of references will be included in the reprints of this article.

SMA meets....

in Dallas....

in 1961....

Treatment of Bites of North American Pit Vipers

PO M. YA, M.D., TOMAS GUZMAN, M.D., and
JOHN F. PERRY, JR., M.D.,† *Minneapolis, Minn.*

The treatment of rattlesnake bite has remained controversial. This experimental work with dogs indicates that incision and suction represents a poor therapeutic approach. Antivenom, if used promptly, certainly seems the best method of treatment.

DECISION AS TO THE BEST TREATMENT for bites of poisonous snakes has proven difficult. Conclusions based on experience with human patients are unwarranted in many instances, since size, age and health of the bitten individual, size and species of the snake, amount and necrotizing properties of the venom are but a few of the variables which may be as important in determining the lethal potential of the bite and the local damage resulting as the treatment administered. On the other hand, although envenomation experiments in animals are not strictly comparable to snake bites in humans, they offer some control over the variables mentioned. Clinical and autopsy evidence indicates the lesions produced by venom and the mechanism of death in large animals such as the dog are similar to those in humans. Such experiments may provide evidence as to the value of the various treatment methods proposed. This communication relates in brief a series of envenomation experiments carried out in dogs and conclusions concerning treatment of bites of North American pit vipers based on them. This material has been reported in more detail elsewhere.[1]

Experimental Observations

Several treatment methods were employed after healthy mongrel dogs, anesthetized with sodium pentobarbital, had been injected subcutaneously in the lateral aspect of one thigh with venom of *Crotalus adamanteus*. Dried venom was reconstituted to 50 mg./ml. with normal saline prior to injection. Following experimental treatment animals were returned to their cages and observed until death, recovery, or sacrifice. Animals living for four days were considered survivors. Body temperature of animals utilized in experiments with hypothermia was maintained at normal levels with a heating pad, but no other supportive treatment such as blood, fluids or antibiotics was utilized. Animals receiving antiserum were treated with *Antivenin (Crotalidae) Polyvalent** prepared in accordance with instructions as given by the manufacturer and administered intravenously.

Preliminary experiments demonstrated that 8 mg. venom/kg. body weight was a satisfactory lethal dose for evaluation of therapy. Although occasional untreated animals survived venom dosage of 5 to 6 mg./kg. body weight, no animal survived when given 7 to 8 mg./kg. and all of the 9 animals receiving 8 mg. venom/kg. were dead within 16 hours. In animals receiving the smaller doses of venom, local necrosis at the site of venom injection was of severe degree in every instance.[2] Unless otherwise stated in the experiments described below, animals received 8 mg. venom/kg. body weight prior to treatment.

Incision and Suction

Three groups of animals were treated by incision and suction. In all groups following envenomation, a tourniquet was applied tightly enough to impede lymphatic flow from the limb. In the first group of animals, two cruciate incisions one-half inch long and one-half inch apart were made over the site of venom injection and suction was applied immediately to the incised wounds by means of a suction apparatus previously prepared by grinding off the end of the barrel of a 20 ml. glass syringe. Suction was continued for a total time of one-

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*Kindly supplied by Wyeth Laboratories.

half hour. Only 2 of the 8 animals survived and each developed local necrosis of severe degree at the site of the venom injection.

Following injection of venom a second group of animals was treated intensively by incision-suction without delay. Beginning at the site of venom injection multiple cruciate incisions were made over the limb as swelling progressed. An average of 15 incisions was made per limb. Suction was applied to the wounds for 15 minutes of each half-hour period and was continued for 3 hours in two experiments and for 6 hours in nine. One of 2 animals treated for 3 hours and 5 of 9 treated 6 hours survived. The envenomated limbs of surviving animals developed severe necrosis in every instance.

For a third group of animals 30 minutes were allowed to lapse following injection of venom before institution of treatment. Although incision-suction was carried out exactly as in the second group, (average 15 incisions per limb and suction continued 6 hours) there were no survivors among 6 animals treated.

Tourniquet and Local Hypothermia

Immediately following the injection of venom a tourniquet was applied tightly around the limb to occlude blood flow. The limb was packed in ice in a plastic bag and at the end of one hour the tourniquet was removed. The limb remained packed in ice for 24 hours or until death of the animal, if this occurred earlier. At the end of this time period the limb was allowed to rewarm slowly by not replacing the ice as it melted. Skin temperatures averaged 10°C. during the cooling period. All of the 8 animals which received 8 mg. venom/kg. body weight prior to treatment failed to survive. A single animal which had received 6 mg. venom/kg. and both of 2 injected with 7 mg. venom/kg. also died, but 4 of 5 animals which had received 5 mg. venom/kg. survived when treated by this method. Local necrosis of the envenomated limb in these animals surviving after treatment by local hypothermia was the most severe encountered. In 2 of the animals circumferential slough with gangrene of the entire limb distally occurred.

Tourniquet—Local Hypothermia—Antivenin Administration

In one group of 8 animals, following envenomation, application of a tourniquet for one hour and cooling of the extremity was carried out exactly as above described for a period of 8 hours. At the end of this time, specific antiserum was given intravenously in a dosage calculated to neutralize 4 mg. venom/kg. body weight. Six of the 8 animals survived and each developed local necrosis of severe degree. In another group of 8 animals, treatment by hypothermia was carried out in the same manner for 4 hours and specific antiserum was then given in dosage calculated to neutralize 4 mg. venom/kg. body weight. Again 6 of 8 animals survived and all developed severe damage of the tissues of the envenomated limb.

Administration of Antivenin Alone

Seven animals were treated with antivenin in a dosage calculated to neutralize 4 mg. venom/kg. body weight after 8 hour's delay following envenomation. During this period the only treatment administered was a tourniquet loosely applied around the limb to impede lymphatic flow. Only one animal survived. Another group of 8 animals was treated by antivenin in the same dosage after 4 hour's delay under the same conditions. Five of the 8 survived and 3 died. Two of these survivors developed severe necrosis locally. Two had moderate tissue damage and one had only slight tissue injury at the site of venom injection. Finally, in a third group of 8 animals, antivenin was given in amounts calculated to neutralize 4 mg. venom/kg. body weight 30 minutes after venom injection. All animals survived and only one developed slight necrosis. The remaining 7 animals developed no local tissue damage.

Discussion

Although incision-suction treatment was shown to be of some benefit in animal experiments, we were unable to obtain uniform survival by this method and our results were less good than those reported by Jackson.[3,4] Conceivably, since venom of *Crotalus atrox* was utilized in Jackson's experiments, and venom of *Crotalus adamanteus* in ours, differences in results may be explicable on this basis.

In our experiments a technic comparable to the first-aid treatment of snake bite, incision-suction treatment limited to the venom site only, led to survival of only 25% of the animals treated, and only when the incision-suction treatment was immediately and vigor-

ously applied (multiple incisions, suction continued several hours) was survival of 54% of animals observed. When delayed for 30 minutes after envenomation, incision-suction treatment was useless. It is likewise noteworthy that the best results obtained with incision-suction were no better than those obtained by antivenin treatment delayed 4 hours. In human cases, practical considerations make the application of incision-suction treatment of the type which resulted in the best survival of animals almost impossible without some delay. We were unable to confirm the beneficial effects of local hypothermia as definitive treatment.[5] Animals injected with venom in lethal dosage uniformly died when treated by this method, and those receiving smaller amounts of venom and surviving developed necrosis of the injected limb which was more severe than that of animals of any other group. It would appear that the localization of venom by cold is definitely deleterious. However, it did appear to be some benefit to cool the envenomated extremity of an animal if antivenin was given after a delay of 8 hours, but no significant value of interim cooling was demonstrated if antivenin was given within 4 hours of the time of envenomation.

It is recognized that incision-suction treatment has been a standard form of treatment for many years. Such treatment was advocated during a period when antivenins were less potent and reliable and not so readily available as today. It would appear that the proper treatment for bites of North American pit vipers today is the administration of antivenin as soon as possible after the bite occurs—without the use of incision-suction or local cooling. Incision-suction treatment should be utilized *only* in situations where no other treatment is available or will be available for many hours to come, and the bite is a potentially lethal one.

Local hypothermia may be useful as interim treatment for potentially lethal bites (e.g., large snake, small child) for which antiserum will be available after a delay of some hours. Here, increased local damage by cold would be accepted as the price of survival of the bitten individual. Treatment of bites of snakes in this manner otherwise appears to be more harmful than beneficial.

Summary

Envenomation experiments in dogs indicate the preferred treatment of North American pit viper bites is administration of antivenin as soon as possible after the bite. Incision-suction and local cooling of the bitten area should not be utilized except under special circumstances.

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Neonatal Septicemia*

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The causes, organisms involved, clinical manifestations and treatment are considered in this careful review of 74 cases. All were under 30 days of age. The staphylococcus was found to be the outstanding offending organism.

THE TERM NEONATAL SEPTICEMIA has been used to describe various overlapping pathologic conditions in the newborn infant. However, the most rigorous definition confines itself to a group of bacterial infections which are presumably acquired at or soon after birth, in which the microorganism gains entrance to the blood stream through one of the portals peculiar to the newborn infant.[1]

In a small group of newborn infants, the origin of septicemia is clinically obscure. The onset of symptoms is usually sudden and progression of the condition is rapid. Initial evaluation reveals that these patients are ill, but physical examination fails to disclose a focus of infection or the portal of entry. The current study was directed toward this group.

It is our purpose to review the patients with neonatal septicemia of obscure origin at Vanderbilt University Hospital since 1927, to compare this group of patients with others reported in the literature, and to highlight aids to early diagnosis and prompt definitive therapy.

Patient Material

Clinical records were reviewed of all infants under 30 days of age admitted to Vanderbilt University Hospital from January 1927 to January 1959, in whom the diagnosis of bacteremia or septicemia had been made.

The criteria for selection in this study were:

1. A positive blood culture within the first 30 days of life.*

2. The absence of a clearcut major disease, such as a severe chronic diarrhea, massive pyoderma, or various debilitating postoperative states prior to the clinical manifestations of septicemia.

3. The absence of a severe congenital anomaly with late onset of sepsis.

Seventy-four infants were observed in whom the diagnosis of sepsis neonatorum was made in accordance with the above conditions.

TABLE 1

CULTURES

	Number of Patients						
	Blood	*Cerebrospinal Fluid*	*Skin Lesion*	*Umbilicus*	*Throat or Nasopharynx*	*Urine*	*Stool*
Staphylococcus	50	3	2	3	5	0	0
Streptococcus	5	2	1	1	0	0	0
Pneumococcus	4	4	0	0	0	0	0
Enteric bacilli							
E. Coli	8	1	0	1	1	1	1
Other	4	0	0	0	2	0	2
Mixed	3	1	1	0	0	0	1

Bacteriologic Results

The major causative organism in this series differs remarkably from that reported in the literature, since in 50 of 74 patients the infection was due to the staphylococcus (Table 1). Of those tested, 6 cultures were coagulase positive and 9 were coagulase negative. This seems to point up the fact that in newborn infants the infecting organism may be one which is ordinarily considered to be nonpathogenic in older children. Enteric microorganisms were the next most common offending agents, being

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*In the pediatric bacteriology laboratory at Vanderbilt University Hospital, blood cultures are prepared as follows: In the treatment room, immediately after withdrawal from the patient, blood is inoculated into a bottle of brain-heart-infusion broth and into a small flask containing sodium citrate solution. In the laboratory the citrated blood is used to inoculate thiglycollate broth and a poured plate. A culture is considered positive for staphylococcus only if this organism grows in all three media, regardless of the number of colonies on the poured plate, or if it is identified in repeated cultures. Any postmortem culture is considered significant only if it was obtained immediately following death.

identified in 12 infants (*E. coli* in 8; *A. aerogenes,* Proteus, *Pseudomonas aeruginosa* and Salmonella in one each). Streptococci were responsible for infection in only five. Septicemia was caused by pneumococci in 4 babies. Of three mixed infections, *E. coli* and *A. aerogenes, E. coli* and staphylococcus, and staphylococcus and hemolytic streptococcus were observed once in individual patients.

The same microorganism isolated from the blood was found in the cerebrospinal fluid in 11 patients. All 4 cases of pneumococcal septicemia were associated with meningitis and a positive cerebrospinal fluid culture. Meningeal infection was caused by the staphylococcus in 3, streptococcus in 2, and *E. coli* in one. A mixed infection of *E. coli* and staphylococcus was identified in one infant.

The same organism isolated from the blood stream was infrequently found in various other sites, such as the umbilicus, skin lesion, throat, stools, urine and nasopharynx.

Clinical Features

Of the 74 patients included in this study, 54 were males and 20 were females.

Prenatal and perinatal factors may be considered to have influenced the development of sepsis in certain cases. In 10 there was rupture of the membranes more than 24 hours prior to delivery and prophylactic antibiotics were given to 4 of the mothers. Nineteen births were considered to be premature. A difficult delivery was recorded in 18 patients. Maternal infection was present in 13 instances, but in none of these was there an obvious direct relationship to the neonatal illness. Only 4 infants had been circumcised recently.

Although the manifestations of septicemia occurred at various times during the neonatal period, the average age of onset was 7.0 days.

The most frequent clinical manifestations are presented in table 2. Sixty-five of the 74 infants had an elevation of temperature (100° F. or higher) at some time during the course of the illness. Except for fever, gastrointestinal symptoms were the most common manifestations. Early vomiting or dehydration occurred in 46 patients. Thirty-one of these patients exhibited apathy toward feeding or lack of sucking vigor. Irregular respirations, apnea, labored respirations or cyanosis were noted in 34 infants.

TABLE 2

CLINICAL MANIFESTATIONS IN 74 INFANTS WITH NEONATAL SEPSIS

Fever	65
Vomiting or dehydration	46
Cyanosis or respiratory distress	34
Anorexia	31
Lethargy	28
Jaundice	26
Skin Lesions	21
Irritability	21
Enlarged liver or spleen	20

When jaundice occurs in the first day or two of life, it must be differentiated from hemolytic disease. Twenty-six patients in this series had jaundice early in the illness. In 20 the liver or spleen were enlarged.

Symptoms related to the central nervous system usually represented evidence of meningitis. Irritability or lethargy were often the only symptoms suggestive of meningeal infection. In 3 patients with meningitis there were no early symptoms suggesting nervous system involvement. In this series all patients with convulsions had meningitis.

In the 21 infants with skin lesions, the etiologic agent was the staphylococcus or streptococcus. Omphalitis was present in 16 babies; 14 of these were associated with staphylococcal or streptococcal sepsis.

Complications determined by clinical, laboratory, or postmortem examination are presented in table 3. It is noted that pneumonia and meningitis are the most serious complications. Impetigo, otitis media, petechiae and purpura, peritonitis, osteomyelitis, conjunctivitis, and septic arthritis were less common complications. Four of these patients also had erythroblastosis fetalis, but a positive blood culture was obtained prior to any exchange transfusion. Postmortem examination was performed in 16 cases, and in each the findings were compatible with the clinical diagnosis.

TABLE 3

COMPLICATIONS IN 74 INFANTS WITH NEONATAL SEPTICEMIA

Pneumonia	17
Omphalitis	16
Meningitis	15
Impetigo	9
Otitis media	8
Petechiae or purpura	5
Peritonitis	3
Septic arthritis	3
Conjunctivitis	3
Osteomyelitis	2

Laboratory Data

Leukocyte counts were not helpful in providing clues to sepsis since 65% of the patients had normal counts. Twenty-five per cent had counts above 20,000 and 10% had counts below 5,000 per cu. mm. Leukopenia seemed to have grave prognostic significance, since 5 out of 6 patients with leukocyte counts below 5,000 per cu. mm. expired. Of the 3 recorded leukocyte counts in pneumococcal infections, all were below 5,000 per cu. mm.

In 8 patients out of 22 on whom lumbar puncture was performed, there were greater than 10 cells per cu. mm. in the cerebrospinal fluid.

There is very little indication that these patients, as a group, had anemia, since only 7 of the 74 had hemoglobin concentration below 10 Gm. per 100 ml.

Review of Literature

Prior to 1933, the principal organism found in bacteriologically proven neonatal sepsis was the hemolytic streptococcus.[2,3] Dunham,[4] in 1933, reviewed the problem in a classic manner and described 39 proven cases in which the streptococcus, staphylococcus, and *Escherichia coli* were the most common offending organisms. Only 3 of the infants survived.

Clifford,[5] in 1947, reported 3 instances of maternal septicemia in which positive blood cultures were obtained from the babies at birth.

Debré,[6] in 1949, observed that fever and alimentary symptoms dominated the clinical picture in neonatal sepsis.

Silverman and Homan,[7] in 1949, defined clearly the rigorous criteria of septicemia of obscure origin in the newborn. Fever, jaundice and pyelonephritis were the most common manifestations. In a series of 25 patients an enteric microorganism was the offending agent in 17 while streptococci and staphylococci were each found in four. Eleven infants survived.

Smith and co-workers,[8] in 1956, defined rigid criteria for the interpretation of bacteriologic data. In 15 patients with neonatal septicemia, enteric microorganisms were the offending agent in 12, and staphylococci in three.

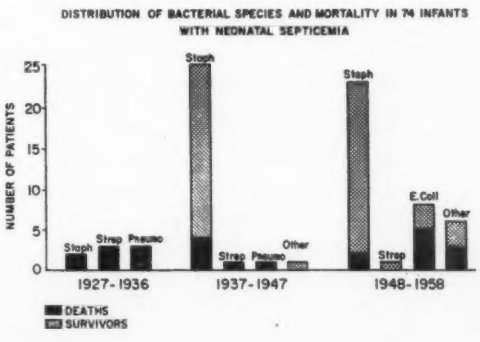
Nyhan and Fousek,[9] in 1958, presented a series of 106 patients with neonatal septicemia. *E. coli* was the most common offending microorganism, followed by streptococci, Pseudomonas, staphylococci and pneumococci. Fever, abdominal distention, icterus and hepatomegaly were the most common clinical manifestations.

Discussion

Experience with neonatal septicemia in recent series reported in the literature has revealed that enteric microorganisms, particularly *E. coli,* are the most frequent etiologic agents. Isolation measures and aseptic technic in the obstetric and nursery services have largely eliminated the hemolytic streptococcus and pneumococcus as the cause of septicemia in the newborn infant. In the present series the other groups of organisms are overshadowed by the predominance of the staphylococcus. One favorable fact about staphylococcal septicemia in our series, however, is that the mortality is lower than that due to infection with any of the other groups of microorganisms in this series. Although the recent prevalence of antibiotic resistant staphylococci in hospitals[10,11] and nursery populations has been reported, the low mortality in this series seems to indicate that the organisms have not necessarily been antibiotic resistant.

The serious nature of untreated septicemia of the newborn was well demonstrated in Dunham's[4] series in 1933, in which only 3 of 39 patients survived. When adequately treated with broad-spectrum antibiotics the prognosis is radically changed, as Smith[8] showed when 13 of 15 infants survived. Nyhan,[9] however, reported an over-all mortality rate of 72 per cent. Figure 1 illustrates that the introduction of sulfonamides and antibiotics has altered the course of this disease. Prior to 1937 all pa-

FIG. 1



tients with septicemia died. The advent of antimicrobial therapy resulted in an over-all mortality rate below 25 per cent. Since 1937 there has been an increase in the number of staphylococcal infections, but the mortality rate has been low, only 6 out of 48 patients dying. The only cases of *E. coli* septicemia were identified after 1948 and the mortality rate of 62.5% is higher than that due to infection with any other microorganism during this same time period. There was no uniform plan of treatment. Penicillin and streptomycin were frequently employed, sometimes in combination with sulfonamides, tetracycline, or other broad-spectrum agents such as chloromycetin. In some instances the results of sensitivity studies indicated a change in the therapeutic regimen. The over-all mortality rate was 32.4 per cent. The improved mortality rate indicates that the prognosis in uncomplicated neonatal septicemia is good, providing that early diagnosis is made and prompt treatment with broad-spectrum antibiotics instituted.

Clinical manifestations of neonatal septicemia were most variable and often the child's reaction to bacterial invasion was misleadingly mild, particularly in premature infants. In many the white blood cell count was in the normal range. In others, leukocytosis or leukopenia gave indications of blood stream infection. At an early stage in the disease fever was not a prominent sign, but at some point in the illness almost all the infants were febrile. In any newborn infant who is obscurely ill the diagnosis of septicemia should be entertained and, more specifically, an infant with fever and jaundice should be considered to have septicemia until proven otherwise. Some other common manifestations suggesting diagnostic utility are lethargy, skin infection, irritability, and hepatosplenomegaly. Some general manifestations related to the gastrointestinal and respiratory systems are very common.

The diagnosis of neonatal septicemia must be made by blood culture, which should be performed on all infants whose "failure to do well" in the newborn nursery is not adequately explained. A similar inclination to perform a spinal tap on minimal provocation is requisite for the early diagnosis of meningitis. After the history and physical examination are obtained and suspicion of sepsis is entertained, the following admission work-up as mentioned by Silverman[7] is recommended: blood culture, umbilical stump culture, complete blood cell count with sedimentation rate, urinalysis, and lumbar puncture.

As soon as cultures are performed, the infant suspected of having septicemia should be treated immediately with broad-spectrum antibiotics designed to eradicate the most probable pathogens, namely, staphylococci and coliform microorganisms. For initial treatment a combination of penicillin, 150,000 units twice daily, streptomycin, 50 mg./kg./day, and chloramphenicol, 20 mg./kg./day, should give adequate coverage. The "gray syndrome," gastrointestinal symptoms followed by circulatory collapse and death, has been reported in several pediatric centers where newborn or premature infants received unusually high doses of chloramphenicol (100 mg./kg./day or more).[12-14] We believe that 20 mg./kg./day gives adequate blood levels, although Weiss, Glazko and Weston[14] recommend 50 mg./kg./day for full-term infants in the neonatal age group and 25 mg./kg./day for prematures. The results of the blood cultures and sensitivity tests may indicate a change in the therapeutic regimen. Duration of therapy can best be judged by the clinical response of the patient and the eradication of microorganisms from the blood stream, cerebrospinal fluid, and other foci of infection.

In infants born of mothers whose membranes were ruptured more than 24 hours prior to delivery, it is recommended that prophylaxis with penicillin and streptomycin be administered for 3 days. The same dosage advocated for therapy should be used, although Burns, Hodgman and Cass[13] found no benefit from the prophylactic administration of a similar dosage of penicillin and streptomycin.

Summary

Seventy-four cases of neonatal septicemia of obscure origin over a 31 year period at Vanderbilt University Hospital were reported. The criteria for this diagnosis were: a positive blood culture within the first 30 days of life and the absence of a clearcut major disease or a severe congenital anomaly with late onset of sepsis.

The clinical manifestations, laboratory findings, and etiologic bacteria were presented and compared to those previously reported in the literature. Staphylococcal organisms were responsible for the majority of the infections.

Fever, gastrointestinal symptoms, and lethargy were the most common clinical manifestations.

The infant suspected of having septicemia should be treated immediately with broad-spectrum antibiotics designed to eradicate staphylococci and coliform microorganisms. For initial treatment a combination of penicillin, 150,000 units twice daily, streptomycin 50 mg./kg./day and chloramphenicol 20 mg./kg./day should give adequate coverage.

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The Industrial Physician—Where Is He Going?*

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As a background aid in determining where the industrial physician is going, it will be helpful to find out from whence he comes —and he has come quite a distance!

Industrial medicine, as did many of the medical disciplines, had its origin in antiquity. Hippocrates, who lived between 460 and 370 B.C., described occupational diseases of miners, tailors, farmers, horsemen, and fishermen. Galen, 131 to 201 A.D., also wrote on occupational diseases. He pointed out that students were exposed to a hazard from the fumes of the tallow candles by which they studied. In later days, Ramazzini, 1633 to 1714, known as the Father of Industrial Medicine, wrote a text on "The Diseases of Workers," which was so superior that it was a hundred years before an improvement was written. He made an exhaustive review of the literature and described a hundred different occupations and the special hazards of each. His book was written for practicing physicians and advised proper treatment for the specific occupational diseases of the various trades.

Actually though, the progress of industrial medicine is closely parallel to the progress of the machine age, a period of roughly 160 years. Germany, followed by Great Britain, led the world in legislation in the laborers' behalf. In the United States, California and New York, in 1911, made compulsory the reporting of occupational diseases, and New Jersey passed the first state law making certain occupational diseases compensable. The greatest growth in industrial or occupational medicine has taken place since that time. While legislation was the initial force causing concern for the workers' health and welfare, more recently management has taken an active and enlightened view toward its responsibility for the health and safety of its workers. With the passage of Workmen's Compensation Laws, state by state, industry became concerned about the costs of carrying out these medical programs required by law. Its initial concern and primary objective was to provide prompt medical care to the injured employee, not only to comply with the provisions of the law, but to keep costs at a minimum.

Gradually, however, partially stimulated by the provisions of health and welfare fringe benefits bargained into labor contracts, and partially through an emerging, genuine humanitarian interest in its employees, industry shifted its primary interest from the treatment of illness and injury to the prevention of these occupational hazards. This shift in interest has been emphasized in recent years by industry's awakening interest in mental health programs and the emotional health of its employees. With increasing frequency, conferences and seminars in the field of occupational mental health are being held. These are well attended by industrial physicians, personnel administrators, and other representatives of top management. They have shown a real interest in the emotional well-being of their employees, both on and off the job. Aside from the humanitarian attitudes of industry toward its occupational health programs, it has learned also that it is simply good business to invest in the health of its employees. The mutual objectives of management and industrial medicine have evolved into programs to promote good health and to prevent disease and injury.

These programs have had increasing acceptance by employees. From an early feeling of suspicion and distrust on the part of a large number of employees, through a generally enlightened attitude and a large measure of patience on the part of both management and medical department personnel, the occupational health program, by and large, has gained employee acceptance.

*Chairman's Address, read before the Section on Industrial Medicine and Surgery, Southern Medical Association, Fifty-Fourth Annual Meeting, St. Louis, Mo., Oct. 31-Nov. 3, 1960.

One recent survey in a large company showed a high degree of confidence, on the part of the employees, in the Medical Department and the physician-employee (patient) relationship, but at the same time showed a desire to have a better understanding of the functions of the Medical Department, its relationship to the individual employee, to management, to the community physicians and to health and welfare organizations in the community.

This, then, is where the industrial physician has been, but where is he now? To bring this picture into focus, one must look at the physician, his medical facilities, his opportunities for new or continuing education in this rapidly advancing specialty. The most striking advance in the field of occupational health has taken place in recent years. How fast has the number of physicians in this specialty grown? The *Directory of the American Medical Association,* in 1940, listed 404 full-time and 1,204 part-time industrial physicians. Eighteen years later, in 1958, the number of full-time industrial physicians had grown to 1,247, more than three times as many, while the number of part-time physicians dropped by 132. Published estimates of the number of physicians specializing in industrial medicine, either full-time or part-time, generally have been higher than these figures with a top estimate of 5,000 full-time and 10,000 part-time industrial physicians.

Through what means does the industrial worker receive his occupational health care? This ranges from the small town general medical or surgical physician who will care for the employees of several small businesses as a part of his general practice, through the large city private industrial medical clinic, providing services for a number of businesses and industries of varying size, to the large company medical department providing the employees of that company with a comprehensive occupational health program. Each of these services and all of the variations in between perform needed services in their particular situation. Some of these services are efficiently operated on a high ethical plane while others have need for improvement in these areas. The workers in some industries and in some locations have excellent and complete occupational health coverage while others have a minimum of these desired services. Many of the workers in the latter circumstances are employed by small companies or are in isolated locations. Magnuson[1] observes that "over 99% of all establishments under the old age and survivors insurance program of the Social Security Administration employ less than 500 workers" and further states that "employees of small businesses represent approximately two-thirds of our labor force." He adds that "less than one out of 10 of all employees are estimated to have preventive health services available to them through industry," and observes that "far too many small plant workers receive only emergency treatment of accidents."

It becomes imperative, then, for us to broaden our teaching program, particularly at the medical school level. Every physician should have at least a working knowledge of the principles of industrial medicine and their application. The importance of this is emphasized by a poll taken a few years ago by the American Academy of General Practice in which it was indicated that 93% of its members had direct or indirect dealing with medical cases of industrial illness or injury. Providing broader instruction in occupational medicine in medical school would certainly equip every doctor to render the best possible care for these employees.

One big stumbling block in this direction of education is that, even though the educators and students seem to want it, expansion of the occupational health teaching program in an already over-crowded curriculum is a difficult task. In spite of this difficulty, progress is being made. Felton[2] has reported from the results of questionnaires that, "In 1954, only 39 schools in the United States were teaching occupational medicine, whereas in 1960, there were 70 American and Canadian schools with programs." This promises increasingly proficient care for the industrial illnesses and injuries for the millions in our huge labor force. It would be hoped that a better understanding of the scope of the practice of occupational medicine would result in an increase in preventive health services to the worker.

Opportunities for advanced study in occupational health are also improving. In the 1960 issue of the *Journal of the American Medical Association* listing approved residencies,[3] there are 6 educational institutions

listed which have been approved by the Council on Medical Education and Hospitals and the American Board of Preventive Medicine for three years of training, including in-plant training, in Occupational Medicine. They are:

1. Harvard University School of Public Health, Boston, Massachusetts.
2. University of Michigan Institute of Industrial Health, Ann Arbor, Michigan.
3. University of Rochester School of Medicine and Dentistry, Rochester, New York.
4. University of Cincinnati Institute of Industrial Health, Graduate School of Arts and Sciences, Cincinnati, Ohio.
5. Ohio State University Medical Center, Department of Preventive Medicine, Columbus, Ohio.
6. University of Pittsburgh, Graduate School of Public Health, Pittsburgh, Pennsylvania.

In addition, the Council and the Board have approved 13 plants and agencies for one year of training to cover the requirement for in-plant training in residencies in Occupational Medicine.

In another issue of the *Journal of the American Medical Association* listing postgraduate courses for physicians,[4] there are listed 23 courses in Occupational Medicine for the 1960-1961 school year. These courses are of varying length and cover a variety of subjects. In addition to these, numerous other workshops, seminars, and institutes are held annually. Among those which come to mind is the Seminar for Occupational Physicians on "Maintaining Emotional Health," conducted annually by The Menninger Foundation, in Topeka, Kansas. Colby College, in Waterville, Maine, conducts an annual Institute on Occupational Hearing Loss. These are just two representative courses reflecting the growing academic interest in occupational health problems.

It is obvious from these listings that the opportunities for advanced study in Occupational Medicine are rapidly increasing, but not a bit too soon. Such opportunities for study will have to increase even more rapidly for general medicine and particularly for occupational medicine if the industrial physician is to keep abreast of the technological developments of this fantastic scientific evolution.

Where then, is the industrial physician going? That, of course, depends on, and offers a challenge to him. With the establishment, in 1955, of certification in Occupational Medicine through the American Board of Preventive Medicine, the status of the industrial physician is crystal clear. Is he ready to accept his challenge? I think he is. Not only must he continue to be fully aware of the on-the-job working conditions of the employees in his charge, but he must be ever alert to the new hazards which are being introduced into the industrial environment every day. He must take an active and prominent part in controlling these hazards. The effects of radioactive isotopes, microwave radiation, of new and relatively unknown chemicals—just to mention a few—must be promptly studied to provide adequate safeguards for the worker. He must understand the manner in which these are used in order to contribute significantly to the development of satisfactory safety programs. One attribute of the qualified industrial physician which sets him apart from other physicians concerned with the placement and treatment of the labor force is his superior knowledge of, and familiarity with, on-the-job conditions. It would behoove every physician who interests himself in doing preplacement examinations and in the treatment of occupational illnesses and injuries to familiarize himself with the work operations of the industries he serves. It would be wise for him to become intimately familiar with the Workmen's Compensation laws and the provisions of the Social Security laws as they affect the worker. He will often be called upon to help to administer these acts. His application of the principles in preventive medicine in industry will surely cause him to recognize their value and foster their application in his private practice. The ultimate goal of every physician should be to prevent disease and injury before he has to treat it. Witness the benefits which have accrued to mankind from our various immunization programs. A broader application of this philosophy must result in increased benefits to all.

While the industrial physician must be ever alert to the kaleidoscopic changes taking place in the industrial environment, he must be ever mindful of the basic concepts

of occupational medicine. He must be mindful of his independent and neutral position between management and labor. He has an obligation to provide management with the best possible medical program at the least possible cost, consistent with medical care of the highest quality. He has an obligation to provide labor with medical care of the greatest competency. He must know and understand the problems of management as he must know those of the labor force. He must follow an unbiased, middle-of-the-road course which will at once serve the best interests of the boss and of his workers.

It has become a part of management's thinking that it has a vested interest in the working condition of its employees just as it has in the working condition of its plant. Neither can function efficiently or profitably without the other. And management is willing to back these interests with investment of large sums of monies. This investment has become a fixed operating cost in many companies.

What does an occupational health program cost? Rather than determining total medical costs, the cost per employee is a more illuminating way to judge these costs. In a survey of 135 companies, of the cost of medical services reported in 1956, it was found that 71 or more than half of the companies spent between 10 and 20 dollars per employee per year.[5] Medical services in just under a fourth of the companies cost between one and ten dollars while about 10% of the companies reported costs between 20 and 30 dollars. Most of these companies had an employee population of between 1,000 and 5,000 workers.

The benefits from such medical programs are intangible and difficult to measure, but labor's interest in such programs is indicative of its belief that the employee benefits, and the very fact that industrial medical programs are growing and expanding proves that businessmen judge the programs to be worth more than they cost. In relation to some fringe benefits, the cost of medical service is low but the return is probably greater.

Looking at the labor force, the industrial physician must recognize that not only the strength of a company but the strength of our nation rests in our labor force. A healthy, happy work group is essential to the welfare of our country and it is up to the industrial physician to help keep it so.

Occupational medicine is a force for good and the industrial physician walks side by side with labor and management toward a horizon which promises much for all in improved preventive medicine and occupational health.

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Disaster Mobilization*

JERROLD M. MICHAEL, M.S.E., M.P.H.,† *Washington, D. C.*

The author succinctly outlines what an attack in an atomic war would mean to the physician and his relationship to the population and its problems.

THE ROLE OF THE PHYSICIAN in disaster mobilization is an extensive one and a key one. At no previous stage in history could we anticipate a need for medical services of the magnitude that is presently foreseeable. The threat of nuclear warfare with its capability of mass destruction in unparalleled degree is ever existent. Additional possibilities of horrendous perpetration of disaster are intrinsic in the developments in biological and chemical warfare.

Our country's mobilization efforts are the most critical activities facing the nation today. And civil defense is as vital to every survival plan as is military defense, for no nation can be secure unless it has established protective measures against all eventualities and for all segments of the population.

The Public Health Service responsibility in defense includes all aspects of modern day warfare as they affect the health and medical care of the civilian population. Under assignment by the President, through the Office of Civil and Defense Mobilization, we have undertaken responsibilities in planning and guidance in emergency health matters in order to build civilian readiness to meet disaster and to accomplish basic survival in the wake of disaster.

The Division of Health Mobilization was created to accomplish these purposes. We began by establishing the premise that survival of this country following all-out attack will depend upon its ability to reconstitute social, environmental, industrial, and governmental structures. The health of the surviving population is basic to all recovery. It is the critical area of our concern.

The saving of lives depends upon many health resources, no one of which can be considered singly or can tip the scale alone, except on rare occasions. Certainly when we think in terms of treating casualties numbering in the millions, it is obvious that total resources are involved, including the manpower who can provide medical and nursing care; supplies of drugs and other material; hospital facilities, equipment, and personnel.

In broadest terms, then, emergency health resources are the triad—comprised of personnel, material, and facilities—required to prevent the impairment of, and to improve and restore the physical and mental health conditions of the civilian population. Critical to health considerations, and incorporated within the triad, are elements essential to everyday living, such as safe water and food supplies; adequate shelter, waste disposal; and prevention and/or control of communicable diseases.

The National Health Plan, issued December 1959, as Annex 18 to the National Plan for Civil and Defense Mobilization, provides the general guidelines under which the Health Mobilization program operates, and delineates responsibilities and functions integral to emergency performances.

Health Services or the provision of emergency health services to the population may be divided into health actions concerned with: (1) communicable diseases including detection, identification and control; (2) sanitation as related to the provision of safe food, wastes disposal, vector control, radioactive decontamination procedures, environmental hazards arising from damage to industries and reserves of industrial chemicals; (3) statistics including all vital records; (4) special groups such as care of the chronically ill and aged requiring special assistance and protection of maternal and child health; (5) radiology or evaluation of the radiological situation in terms of public health and radiological defense as it pertains to the provision of health services; and (6)

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medical care including programs to conserve remaining medical resources, measures for rehabilitation of the health of the population, and medical care services involving first aid, self help, triage, emergency surgical care, decontamination of casualties and hospitalization.

The National Health Plan defines health manpower as: physicians, dentists, registered nurses, and sanitary engineers. Personnel from each of these health professions are responsible for actively participating in civil defense and defense mobilization planning and training in his community. The national associations of these health professions, are named as having responsibility to advise the Office of Civil and Defense Mobilization and the Department of Health, Education, and Welfare in organization and planning, training, education, research, and other functions pertinent to each association. The respective organizations further are encouraged to establish committees for this task.

State and local societies of professional health organizations enter the National Health Plan also. Although each state and local health department carries the primary and statutory health role at its respective level, assistance to state and local governmental agencies in the preparation and execution of civil defense health plans from all professional health organizations is necessary to adequate health preparedness.

It is recognized by the Office of Civil and Defense Mobilization and the Public Health Service that provident utilization of professional manpower is the crux of any emergency health plan. Much of our surveying, planning, and operations is devoted to assuring that all health personnel are fully utilized. A primary goal of the health mobilization program is to train doctors of medicine in the rudiments of disaster preparation and activity. The Division of Health Mobilization last spring and summer conducted three baseline courses titled "Health Services Aspects of Health Mobilization." The first was held at Brooklyn, New York; the second at Battle Creek, Michigan; and the third in Alameda, California. Attendance included many representatives from national medical associations.

Some of the subjects taught in the week-long sessions were: medical self-help, medical care by allied medical personnel; radiologic, biologic, and chemical warfare defense; mass casualty care; epidemiology in disaster; sanitation; and community health services. Students also participated in a field exercise in emergency water treatment and witnessed a Civil Defense Emergency Hospital uncrated and set up for operation within minutes after the "go-ahead" signal.

It is hoped that those who attended these three courses have taken back to their communities some of the knowledge they gained and the enthusiasm engendered, for we see in them valuable instruments of assistance to the national defense effort. For our part, we will continue to provide additional material, advice, and assistance to those who have participated in the baseline courses. We also plan to conduct other similar courses and new courses in the future.

On Dec. 4-9, 1960, the course "Health Mobilization Program for Emergency Hospital Management" will be offered in Brooklyn, New York. This course is designed for top administrators of community hospitals to orient them to the planning necessary for national disasters.

On April 23-28, 1961, two courses titled "Nursing Aspects of Health Mobilization" and "Environmental Health Aspects of Health Mobilization" will be offered concurrently in Battle Creek, Michigan, for these professional disciplines.

On May 7-12, 1961, the baseline course oriented to physicians which was previously mentioned, "Health Services Aspects of Health Mobilization," will be offered at Brooklyn, New York.

Tuition and housing are provided without cost to students and repayment of approximately one half the necessary travel expenses can be obtained through OCDM student reimbursement funds. Applications may be made through state civil defense directors.

State level training programs patterned after our initial baseline presentations are also in the offing. Courses are planned for Virginia and Kentucky in the near future. The latter course has been scheduled as a result of the efforts of your section Chairman, Dr. Carroll Witten.

I would like to describe for you some of the premises on which the health mobilization program is based and some of the assumptions

guiding establishment of national emergency planning.

From the combination of experience in the annual Operation Alerts, World War II and Korea; research by private and governmental agencies; and meticulous and specialized studies by both military and civilian experts, we have been able to piece together a projected attack pattern covering all areas of expected exigencies.

In case of all-out attack on the United States by thermonuclear weapons, we can anticipate the following:

1. *The Health Manpower Situation:* Number of expected survivors—135 million. Of these, roughly 120 million will be uninjured; 15 million injured in varying degrees. Number of physicians surviving—some 160,000. This number is expected to diminish to approximately 140,000 sixty days after attack due to delayed radiation sickness and loss from other diseases and injuries. Twenty-seven thousand public health personnel will be alive immediately after attack, with further additional loss of 2,000 expected.
2. *The Health Facilities Situation:* Hospital loss will be heavy during attack and use of many hospitals denied because of "fallout." Nationally, about 800,000 civilian hospital beds will be available, counting those in prepositioned Civil Defense Emergency Hospitals. Due to radiation decay, 285,000 additional beds should be available 60 days after attack, thus reducing the number of competitors for each bed.
3. *The Health Supply Situation:* Actual amounts of water available for human consummation and for sanitary purposes are difficult to estimate. In general, there will be about a 60% pumping capacity in attacked areas. However, lack of power combined with the presence of "fallout" will reduce this 60% to a usable capacity of approximately 10 per cent. An increase to 25% can be expected 60 days after attack. Roughly, 42 million people will thus require emergency water supplies following attack. Two months later, we can anticipate emergency supplies will still be necessary for 29 million people.

   There will be some loss of federally stockpiled medical equipment and supplies, but the most severe losses will be left in producers' plants, wholesale and retail warehouses, and distribution points. Remaining supplies will be difficult to distribute due to "fallout" and limited transportation. Production capacity for health items will be limited and spotty and of considerable concern. For example, unless full production capacity can be restored, there will be insufficient chlorine for water and sewage treatment. Repair and construction of new water and sewage systems will be hindered by limited supplies of pipe and chlorinators. Production of certain essential medical treatment items will be low (penicilin and hypodermic needles) and virtually non-existent for other items —broad spectrum antibiotics and gauze pads, for example.

There will be extensive loss of housing, transportation, and communication and large numbers of people displaced. Organized medical operations can be established only in those areas not subjected to the direct or indirect effects of nuclear weapons—the so-called islands of survival. With the dissipation of radioactivity, other areas will be able to organize medical care programs, and institute emergency public health control measures.

In summary, this will be the situation after attack:

1. The number of available hospital beds will be grossly inadequate. Even with limited professional manpower there would be a capability to use effectively several times the remaining number of hospital beds.
2. Medical supplies and equipment will be grossly inadequate and poorly distributed, and will limit the extent to which hospital bed shortages can be corrected by improvisation.
3. The supply of physicians will be insufficient and will remain so, even if we count each nurse, dentist, and veterinarian as equivalent to a physician.

In one sentence, we can identify the primary job that will face the nation: *to protect and restore the health of the surviving population and create an environment which will permit rebuilding processes to take place.*

Thus, we can readily determine many actions which must be taken—right now—to improve our capacity to withstand such an assault and meet the health needs of the surviving population. Although we here are primarily interested in the role of the professional health workers, the importance and direct relationship of "fallout" shelters, early warning systems, active defense, transportation, and food and clothing, to the medical care problem, cannot be ignored. Just as a safety engineer does not look upon improved methods of surgery for the answers to his problems, civil defense cannot expect the best possible medical program to substitute for a lack of "fallout" shelters and other protective mechanisms. Every preparedness activity in this field will have an effect, directly or indirectly, upon the health of the people.

The immediacy and magnitude of the medical care and public health requirements will be the basic problems created by any attack situation.

The results of disaster will be almost instantaneous with millions of casualties in need of treatment. Not only will there be a gross disparity between the available health resources—that is, manpower, supplies and facilities—and the medical patient load, but also a corresponding disparity in all the supporting services—transportation, fire and rescue, and communications. The radiologic "fallout" in many areas will delay or prevent any organized medical activity for days or weeks. In short, we must anticipate inadequate numbers of health professionals and amounts of supplies, equipment, and facilities; a lack of ability to logistically relate even these limited resources to the patients; and an inability to put into operation organized medical programs in most areas for extended periods of time due to radioactive fallout.

On these bases, our directions are implicit. *We must teach people how to treat themselves—to meet their own health needs—until local conditions permit them to receive medical care.* Presently, we are at about midpoint in what we call our self-help research projects. Investigations have been conducted in many areas germane to basic survival, including medical self-aid, nursing care, hygiene and sanitation, food and water, and confined existence. A manual is being developed which will delineate standardized self-help procedures to be followed in the event of disaster, and a training course will be structured on these principles.

The second phase of this program is being carried out in the South. A Medical Self Help Training Section, directed by the person who spearheaded the development of the Air Force's Buddy Care Program, has been set up in Atlanta, Georgia. Its immediate goal is the development of a training kit designed to provide a prototype training program for the general population. We hope to have the opportunity of seeking preliminary review of this material by your organization before putting it into final form.

In addition to general medical and nursing care, the layman will be able to learn simple methods of treating shock, burns, fractures, hemorrhages and other technics by which he can preserve life.

We must help foster training in disaster medicine for physicians in preparation for the time when only the most austere conditions will exist; when facilities, equipment, and assisting personnel will be either limited or virtually nonexistent.

Members of the allied medical professions also must have special training. Dentists and veterinarians must become proficient in the practice of disaster dentistry and disaster veterinary medicine, respectively. They and nurses, must learn how to take effective lifesaving and first aid measures, and how to assist the medical profession by performing approved additional functions.

Training in lifesaving and first aid measures must be extented to technicians, technologists, occupational and physical therapists, optometrists and podiatrists, along with other approved functions whereby they can assist members of the health professions.

Hospital administrators, pharmacists and medical librarians must be trained to perform their normal functions under the difficulties inherent in casualty and disaster conditions, including field operations.

In short, we must make every effort to assure maximum utilization of every possible health manpower resource, including the average layman, who, if he is pertrained, might save his own or his neighbor's life in an emergency.

Training in the establishment and utilization of emergency hospital facilities plays a major part in health mobilization programming. The Public Health Service has nearly 2,000 200-bed Emergency Hospitals, almost all of which are prepositioned in carefully selected localities throughout the country. Other units are available for prepositioning under qualification, and on loan for training purposes.

These hospitals are designed for use in an existing structure such as a school, auditorium, or warehouse. They contain complete operational equipment and facilities, including ward units, operating rooms, laboratory, x-ray, central supply, and administration.

In the area of health resources are many subjects of major concern. All of us realize the importance water will play in survival. A great deal of work, study, and preplanning is necessary to devise emergency water sources, decontamination methods, and methods of taking care of the sick and injured which do not require large amounts of water. The capabilities of existing water systems to operate after attack are being evaluated and requirements estimated for rehabilitation of those systems that will probably be damaged or destroyed. As a first step in the development of a national water plan, a prototype community emergency water supply program is being developed.

Calculation of requirements for medical supplies and equipment, and supplies and equipment used for sanitation, occupies another major portion of health mobilization efforts. Once requirements are determined for the various items, available supplies are evaluated in accordance with expected damages, calculated loss of mobility, and projected capabilities for utilization. Results indicate the discrepancies after attack that can be anticipated between supplies and requirements. Determination can then be made of procedures necessary to overcome disparities, such as stockpiling and inventory control.

Preparation for meeting the emergency health needs of the nation obviously requires extensive, concentrated activity by every individual and every organization concerned with the welfare of the nation. The role of the physician is vital. It is to prepare its members to cope effectively with the results of a mass attack on the United States and to assist in preparing the nation to withstand such an attack. In accord with the National Health Plan, the Public Health Service, acting within the framework of its role in civil and defense mobilization, welcomes the counsel and advice of the Southern Medical Association, and the active participation of its membership in building optimum national health defense.

Discussion (Abstract)

Dr. Carroll L. Witten, Louisville, Ky. The Southern Medical Association is deeply indebted that Mr. Jerrold Michael has come before us with the presentation of such an excellent and timely message. Among the many problems facing the medical profession one must place the problem of adequate preparation for mobilization of health services in the event of an all-out nuclear war or a national disaster.

Recently great strides have been made in the proper utilization of health manpower by the joint efforts of the U. S. Public Health Service and the Office of Civil and Defense Mobilization. Having had the opportunity to attend the first course for physicians in regard to these problems, I can assure you that the preparations for Civil Defense and Health Mobilization are being pushed forward to an adequate status of usefulness. The medical profession is deeply involved in this phase and must take an ever increasing interest.

Assuming that as many as a third of the physicians, dentists, and nurses would be casualties under an all-out attack on this country, the nation's surviving health manpower resource would be reduced to a number inadequate to meet the needs of the surviving population. Extraordinary measures must be taken to ensure the provident use of the skilled manpower on whom the nation would rely to treat the casualties and the sick. Responsibilities for the development, utilization, and management of health manpower are detailed in the National Health Plan and National Manpower Plan, and the Division has initiated a program to carry out the required action.

Objectives

1. Development of operational procedures for health manpower management to be used at the national and regional levels.

2. Development of standards and guidelines that will be effective at the state and local levels.

The basic requirements for the successful administrative management of health manpower include the following:

(1) Identification of the essential activities which require skilled health manpower (such as hospitals for casualty and noncasualty care, public health, industrial health, medical education, and research).

(2) Establishment of standards and priorities of assignment and utilization of skilled personnel in the various essential activities to ensure a balanced emergency health service.

(3) Inventory of the essential health manpower sup-

ply (including distribution and catalogue of skills) available to perform these various activities.

(4) Administrative procedures necessary to assign or deploy essential health manpower in accordance with the needs and standards that are established.

(5) Administrative procedures necessary to ensure the availability of supporting manpower and services that will permit the most efficient use of essential health personnel.

Essential Activities

1. During the immediate period after attack, the essential activities will consist of the surviving population taking cover, meeting its own immediate health needs through self-care or neighbor-help, and sustaining life until local radiation levels have subsided.

2. As local conditions permit, organized health and medical efforts will be directed to the care of the casualty and noncasualty population, and the reinstitution of public health control measures. Then, community health services will be instituted in conjunction with welfare services for displaced people.

3. As soon as conditions permit, resumption of medical education and reorganization of the medical research program must be accomplished.

Standards of Utilization

The standards and priorities that will guide the management of skilled and unskilled health manpower depend upon the *immediate goals* of restoring the casualty population to good health, re-establishment of public health controls, and institution of measures to ensure the continued good health of the noncasualties; the *secondary goals* of re-establishing professional education and the research systems necessary to sustain the medical and health program; and the *ultimate goal* of assisting the nation to return to its status before attack.

The immediate goals are attained by such measures as:

1. Developing the capability of the civilian population to meet its own health needs through self and neighbor-help.

2. Stockpiling supplies, equipment, and facilities in the areas where they will be immediately available for use and yet protected as well as possible from the effects of attack and deterioration.

3. Mobilizing, organizing, and training skilled and semiskilled health personnel.

4. Operational planning to institute health and medical programs based upon a realistic assessment of the probable situation after attack, the available resources and the local capability for their utilization.

Secondary goals can be realized by preplanning alternate sites for medical schools, preservation of teaching materials, and the development of emergency educational criteria and programs. Existing medical school and research personnel should be maintained as intact as possible while concentrating upon immediate problems following attack so they may revert to their former activities with a minimum of difficulty when conditions permit.

Inventory

Inventory of the supply of health manpower, including the distribution and cataloguing of skills available to perform these activities is a basic requirement of any manpower program. Detailed knowledge of our skilled manpower resource is essential for effective: (1) plans for the stockpiling of supplies, equipment, and facilities; (2) provision, organizationally and operationally, for health services at the local level; and (3) utilization of information of the assessment of damage by bomb in the immediate period after attack.

At present, detailed data on resources of the health manpower of the United States are inadequate at all levels of potential mobilization management—local, state, regional, or national. The minimum inventory required is a catalogue of current information on the essential health manpower residing in each community. This list should be maintained in detail at the local level and be carried numerically at the state, regional, and national levels.

It should not be assumed that this inventory represents a real health manpower resource. It indicates only a potential resource until each inventoried individual has received a mobilization assignment, willingly assumes his role in the local emergency health organization, and has been trained and rehearsed in the actions he will take and the functions he will perform in the event of a disaster.

Administration

1. The effective administrative management of health manpower requires an organizational structure patterned to reach from the local community to the state, regional, and national levels. Local communities and states will need to have the capability of operating programs independently for some time after an attack. In final analysis, however, survival depends upon re-establishing, as early as possible, control of resources to ensure their most provident utilization.

2. Administrative measures must provide the mechanism for each level to utilize fully the health manpower resource within its jurisdiction and, when necessary, to relocate personnel within the area for more advantageous utilization. This would require an evaluation of the health needs in terms of the total supply of health resources available within the state. The evaluation would have to be converted to specific skills and matched with specific persons to be moved. Once the decision is made as to who shall be moved, and where, the state employment service must enter the picture and provide the administrative mechanism to effect the actual transfer.

A similar mechanism will operate at the national and regional levels. The Public Health Service, working in conjunction with the other Federal agencies and the medical and allied health professions, must plan for the allocation, distribution, and utilization of the nonmilitary component of the Nation's "essential" health manpower. This "essential" health manpower, as defined by Annex 18 of the National Plan, includes physicians, dentists, veterinarians, nurses, pharmacists, sanitary engineers, and some 20 other health occupations. These personnel are directly concerned with the Nation's critical health needs and must remain at all times under the direct control of health authorities at each level of government.

The "supporting" health manpower includes dieti-

tians, medical social workers, optometrists, and some 20 other allied health skills. Control of this group is the responsibility of the Department of Labor and its counterparts at each level. Allocations are made to the health authorities by this agency. A detailed list of the two groups, as they now are classified, has been developed within the Interagency Health Advisory Board.

At all levels—national, regional, state, and local—management activities relating to allocation, distribution, and utilization of essential health manpower will be assisted by properly constituted health manpower utilization committees. At the national and regional levels, these committees will be made up of representatives of the Federal health agencies and non-Federal professional health associations. At the state and local levels, they will consist of representatives of the state and local or area health departments and the state and local professional associations.

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A New Approach to Obstetric and Gynecologic Practice*

J. ALLAN OFFEN, M.D.,† *Miami, Fla.*

Many a teacher of undergraduates and house staff will quarrel with the concept of a "self-history" and for good reason, since the diagnostic details of *disease* can often only be ferreted out by the probing inherent in a good history. Nevertheless, if the need for a "self-history" seems indicated, obstetric practice is the one field in which it may be permissible. The author well emphasizes, what women often fail to recognize, that they are not patients by definition, unless a complication arises, but are normal women in a normal physiologic state. The individual obstetrician must judge whether this approach is good and what it does, if anything, to "patient"-doctor relationships, and whether it has any inherent dangers in overlooking disease unapparent to the woman, thereby leading to improper care in the management of her pregnancy.

IN THE 1920's "the new obstetrics" was an appellation designating the use of episiotomy coupled with prophylactic outlet forceps delivery. In the three decades that have since transpired, these practices have become so universally incorporated into what is accepted as good obstetric practice, that in the 1960's they can no longer be considered the new obstetrics. It now may be time for redefinition of this term.

In the last 30 years the technologic and scientific advances have occurred at such an accelerated rate that they have completely surpassed all the combined advances of the previous 300 years in medicine as well as all other fields. That the rapid rate of advance has not been an unmixed blessing is indicated by the turbulence and confusion among medical leadership on social, economic, psychologic and scientific fronts.

Dr. Askey,[1] in his presidential address to the A.M.A. earlier this year, deprecated methods of mass production and the urges to automation in medicine as a threat to the future of medicine. Our revered elder statesman of obstetrics, Dr. Nicholson Eastman[2] asks, "How, with a diminishing personnel and a soaring birth rate can we hope to give to the mothers of 1970 the meticulous, individualized care which they deserve?" and has suggested among other things "training nurse midwives." Siegel[3] has editorialized against the apparent emphasis on pragmatism and the paucity of research in obstetrics and gynecology. In addition, every doctor is subjected to pressures of economic factors, a plethora of meaningless forms and innumerable meetings, all of which make an increasingly excessive demand on the doctor's time to the detriment of patient care and diminution of the opportunity for study and recreation.

The solutions to each of these problems are not necessarily opposed. It is possible to adopt a multifaceted approach which recognizes these problem areas and offers obstetrics and gynecology an integrated and correlated technic for improving the total care of the patient and effecting conditions conducive to better medical practice.

A review of the medical progress of the last few decades reveals that the advances of yesterday were primarily technologic refinements of surgical technics and the improvement of applied pharmacology and bacteriology. However, today, research and studies in the physiologic and biochemical approaches are making the tremendous strides. Tomorrow's horizon promises an organized approach to the study of clinical material and the conduct of research. The highly successful technics which have advanced the fields of industry and science when applied to medicine will undoubtedly bring about a new

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acceleration of medical progress on all fronts. Through the use of electronic devices and computers for statistical analysis of research conducted with large numbers of cases, many of the conclusions based on statistically invalid premises will be avoided. By means of a standardized approach and uniform data, the experience of multiple sources can be quickly reduced and recorded on specialized cards and fed into IBM machines or similar devices to provide a wealth of meaningful information[12] which, when properly interpreted, can provide reliable guideposts for further progress.

With a highly literate population avid for authoritative information on health matters, the time has come to apply new technics of communication in the doctor-patient relationship on both an individual and a mass basis. The application of improved media of communication, such as sound motion pictures, tape-slide presentations, closed circuit color TV, group educational technics and model demonstrations, which have proved so successful in industry are equally suited to the practice of obstetrics and gynecology. These audiovisual aids when properly applied not only save valuable time for the doctor, but more important, they give him his most effective tools for achieving an improved rapport with his patients and for satisfying more adequately the patient's needs for basic information.

Another approach used successfully in industry but scarcely heard of in medicine is the application of time study methods. Conservation of motion, effort and energy based on the study of obstetrics and gynecology would yield a most precious dividend—time. As in industry, time study methods can result in better utilization and conservation of the time, efforts and energies of patients and paramedical and medical personnel. Application of such methods may reduce the total time spent by the doctor with the individual patient but in every case the physician actually has more time for meaningful individualized treatment of the patient. This economy is effected by better utilization of the physician's time and not at the expense of standards of medical practice. Actually, the level of individualized patient care should be elevated.

The psychologic approach under the engaging title of "motivation research" is a major factor in industry. We need not borrow this, since in actuality the psychologic approach is a medical discovery. Its application in medical practice today, however, is more necessary than ever to fulfill the emotional needs of the individual in a troubled world.

How can all of these technics be combined and applied to obstetrics and gynecology? Before attempting to answer this, let us review a definition or two. Gynecologic care in the broad sense constitutes lifetime medical care for the female patient which may be interrupted from time to time by periods of obstetric care. During these periods the occurrence of the physiologic function of childbearing requires that the obstetrician-gynecologist place the greatest emphasis on factors which will insure the safety and health of mother and child. Obstetric and gynecologic care are therefore contiguous and continuous. However, in our discussion they will be considered separately.

Obstetric care is usually divided into:

(1) *The prenatal period.*

(2) *Parturition and the immediate postpartum period.* (The period corresponding to the hospitalization.)

(3) *The postpartum period.* (Considered in the long-term sense.) This is the period during which the emotional adjustment to the new family situation occurs, and in which any condition secondary to childbirth such as cervicitis or erosions should be corrected. During this time cytologic follow-up should be instituted at regular intervals and the patient once more enters the sphere of gynecologic care.

The question is how can all of the technics described be combined into a correlated, integrated approach to obstetrics and gynecology. Let us see how this could be done in obstetrics, starting first and logically with the prenatal period.

During the prenatal period emphasis is placed on obtaining a complete physical examination with a special evaluation of the pelvis in relation to childbearing, instruction in the principles of health that are consistent with an uncomplicated pregnancy and delivery, establishment of rapport between patient and doctor and the development of a generally good psychologic mileu. During this period there are necessarily regular, repeated visits to

the doctor's office with increasing frequency during each of which special attention and prophylaxis is carried out in regard to weight, blood pressure, urine, detection of edema, observation of psychologic attitudes, detection and correction of emotional difficulties, detection and correction of symptoms of other complications and general preparation of the patient for childbirth.

It is not necessary to enumerate the minimal standards for good prenatal care. Instead, we will suggest a correlated, integrated approach

FIG. 1

CONFIDENTIAL PERSONAL HEALTH INVENTORY FOR PREGNANCY

Name: _____ **Age:** _____ **Date:** _____

Address: _____ **Phone:** _____ **Race:** _____ **Birthplace:** _____

Occupation: _____ **Business Address:** _____ **Phone:** _____

Husband or Nearest Relative: _____ **Business Address:** _____ **Phone:** _____

Referred By: _____ _____

In order for your physician to give you the best medical care during your pregnancy it is necessary for him to be thorough and complete, there can be no guessing. He will personally review your medical history with you and do a complete physical examination and obtain whichever tests may be indicated. In addition, certain information is needed in regard to your past medical and surgical history, your family history and your general health in order for him to adequately evaluate the total health picture.

You are therefore requested to fill out the following questionnaire completely and accurately. Do not be concerned -- you will have an adequate opportunity to discuss in detail your pregnancy and any medical problems that you may have with the doctor in person. You will also have the chance to ask any questions which may be troubling you.

This is part of your medical record and is kept absolutely confidential.

Please answer each question. Check (✓) either Yes or No.

Last normal menstrual period started on _____ 19____.

Was it normal? Yes_____ No_____ . Previous menstrual period started on _____ 19____

What is your usual weight? _____ Lbs.

Have you had any?

Yes	No		Yes	No	
		Nausea			Frequency of urination
		Vomiting			Constipation
		Vaginal Bleeding			Headaches
		Vaginal Discharge			Visual disturbances
		Abdominal cramps			Feelings of life
		Breast enlargement			Allergies of any kind

_____ _____ Have you had any other symptoms since you have become pregnant?

History of all previous pregnancies.

How many times have you been pregnant? _____.

How many full-term (9 month) babies have you had? _____.

How many premature babies have you had? _____.

How many miscarriages have you had? _____.

How many living children do you have? _____.

Have any of your babies been jaundiced after birth? _____.

Have all of your children been normal? _____.

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to the practice of obstetrics which will further these standards by combining the principles of the scientific method, patient education, fulfillment of emotional needs, greater individualization and conservation of the physician's time.

One element in this approach is the use of a self-taking history. A survey of 27 obstetricians indicated that the time involved in working up a new obstetric patient may range from 20 minutes to an hour and 15 minutes with the mean somewhere around 45 minutes. By using a self-taking history (Fig. 1) and the technic for educating the patient which is to be described, this can usually be done in a fraction of this time and the resulting obstetric records will be more complete, accurate, standardized and uniform than are usually found in doctors' offices. Negative findings as well as positive findings are recorded. This type of history is completely legible and allows for complete interchangeability of physicians. In its evolution to its present functional form, this self-taking history sheet has been modified many times in the last 10 years on the basis of experience with patients, and it is possible that even wider experience may indicate a need to modify it again.

From the physician's point of view this self-taking history has many advantages. First, it utilizes the patient's time in the waiting room. It is a well-known psychologic fact that the patient identifies with the physician anything that is done to or for her in the doctor's office, regardless of whether it is done by his secretary, his nurse, the laboratory technician or the physician himself. Thus, the patient who is kept waiting for the doctor, avoidably or otherwise, becomes annoyed and identifies this unfavorably with the physician. Conversely, when the patient utilizes her time in the waiting room in connection with her own health by completing a confidential personal history, there is a positive favorable identification. Furthermore, information is obtained which might otherwise not be elicited.

The use of a complete, uniform and standardized history form provides a new wealth of scientific material which is well organized and available for investigation. Research may readily be carried out among patients of an individual physician or groups of physicians of any size or number by the use of punch cards and computers. The information from these charts, including the follow-up sheet and hospital supplemental sheet, is transferred to a special code sheet and thence to IBM cards for rapid analysis by computer. Eastman[2] considers prematurity and toxemia the research problems of first and third importance, respectively, in obstetrics today. It is possible that much information on these and other conditions may be revealed by analysis of some of the information on private patients currently hidden in doctors' offices.

The physician's trained eye and mind becomes readily accustomed to the organized presentation of this material. Areas in the history requiring deeper investigation stand out as though marked with a red flag and the physician explores these as indicated. A brief discussion of the salient features of her history is usually directed at the points that are most significant and that interest the patient the most, thus making the entire experience more personal, cementing the doctor-patient relationship firmly and yet requiring a minimum of time.

Use of this self-taking history conserves time of paramedical personnel. They need only occasionally assist the patient with the use of the history form (Fig. 2). In general, patients, particularly in obstetrics and gynecology, because of its intimate nature, are reluctant to have a history taken by anyone other than the doctor. They find that the self-taking form is objective in its approach and spares embarrassment.

The concept of the confidential nature of

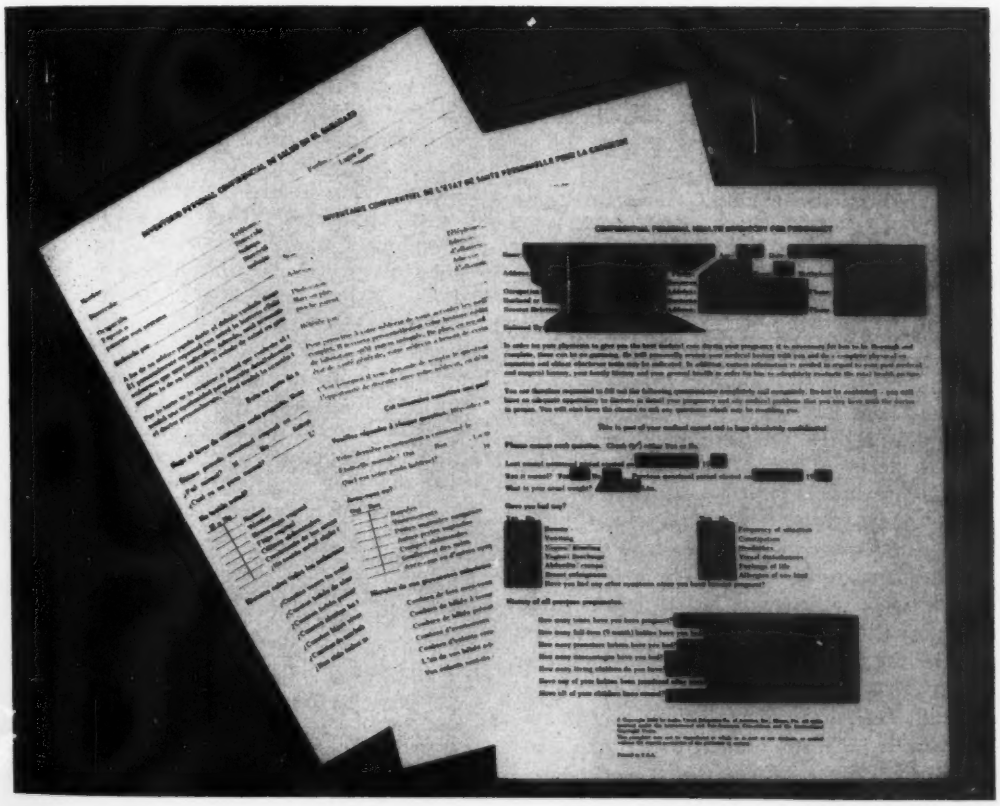
FIG. 2

the patient's history is preserved when the patient fills out a chart which she feels is for the doctor's eyes alone. She is assured by the explanatory paragraph at the beginning of the form confirming the confidential nature of the information and promising adequate opportunity to discuss her problems with the physician in person. Furthermore a self-taking history eliminates the need for the additional office space necessary if the history is not to be overheard by others in the waiting room when it is taken by secretary or nurse. The patient who fills out this personal history completely is impressed with the thoroughness of the physician who uses such an approach and has, in my experience, almost invariably commented favorably in this regard. At the bottom of the history sheet is an area marked "for doctor's use only," which includes a check list for review with each patient, a list of laboratory procedures that may be indicated in a particular case and a lined area for supplemental notes by the physician. There is a separate sheet for recording the physical examination quickly and adequately. On the reverse side of this is a ruled and printed follow-up form whereon observations and subsequent visits can be quickly and precisely noted by either physician or nurse.

A unique modification of the self-taking history enables a physician who speaks only English to obtain a history from a patient who speaks only French or Spanish. The self-taking history form is available in both French and Spanish editions and all answers are indicated by either check marks or Arabic numerals. The patient fills out the questionnaire in her native tongue. The doctor then superimposes an English template with transparent areas covering the answers and he is able to read the entire history in English (Fig. 3).

Another phase in the integrated approach is a program of education for childbirth. Obstetrics is unique in medicine because preg-

FIG. 3



nancy is a physiologic state, not a disease. There is a single etiology, it occurs among women of a certain age group, and is usually self-limited within narrow confines of time. There are associated marked alterations in the organs, tissues and fluid of the body, which are usually reversible. Pregnancy has social significance as well as emotional overtones and undertones.

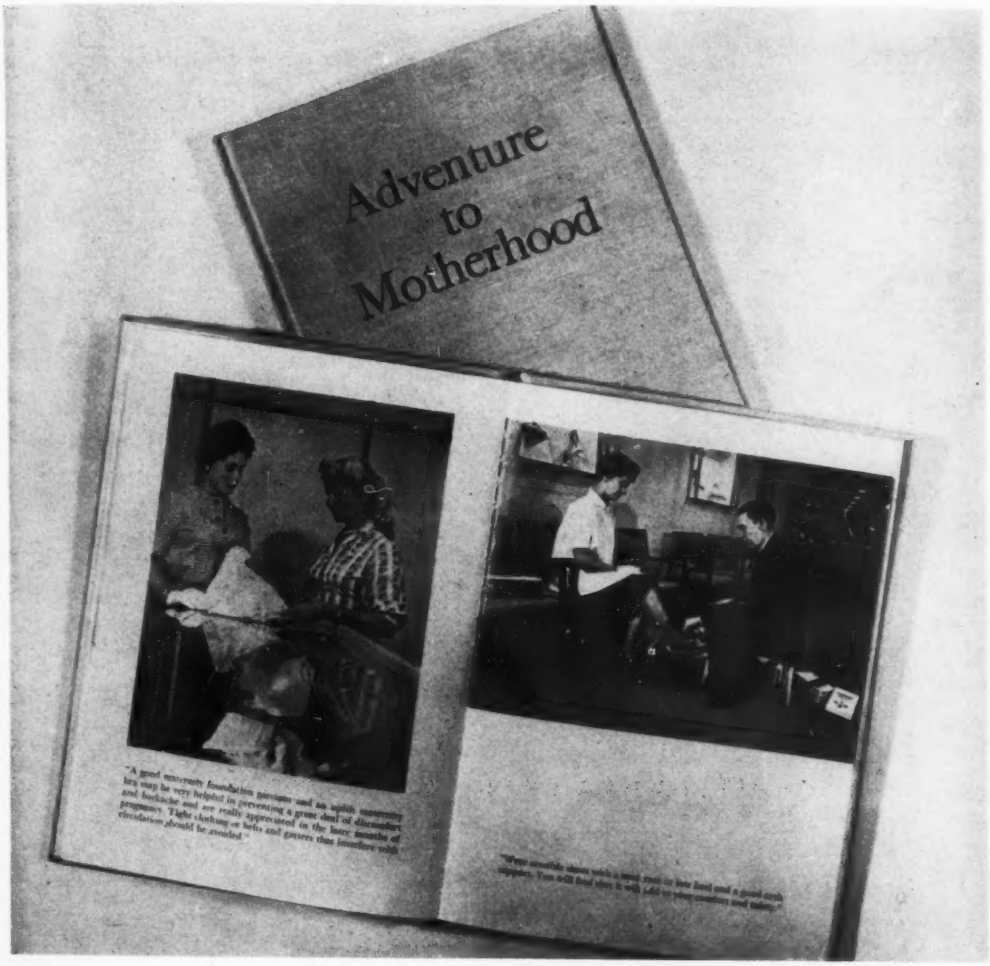
Because it is a physiologic state, pregnancy differs from any other condition in medicine, and since these characteristics are true, obstetrics allows for the greatest possible organization in the doctor's approach to the individual patient. The doctor is well trained for obstetric management, but for good obstetric results it is necessary to have the patient's cooperation for which she also must be trained. The areas of fundamental instruction (i.e., diet, weight control, salt restriction, exercise, rest, travel, garments, iron intake, laboratory tests, dental care, general restrictions, danger signs, etc.) apply to all normally pregnant patients. If the doctor is to spend his time thoroughly educating his patient to these basic rules of health for pregnancy, he will have little time to individualize or personalize the patient's management. Yet personalization is the key to the establishment of rapport and fulfillment of emotional needs which are a *sine qua non* in good obstetric practice.

This education for childbirth can be conducted effectively by utilization of parent's classes, film and slide presentations and books for the patient.[4] Ideally it should be a combination of all three. In most larger communities physicians, who do not or are unable to give their own prenatal classes, may refer patients to those of the American Red Cross[5] or often to local hospitals where such instruction is being offered with increasing frequency by the nursing service. There are a number of films and slide sequences available although we prefer to use our own.

An authoritative, simple reference book for patients seems to be very helpful. It should be nonencyclopedic, concise, factual, easily read and interesting enough to insure that it will be read by the patient and her husband. There are 18 to 20 books on pregnancy for the laity currently available, but again, we prefer to use our own,[6] which was prepared specifically to be a part of our total integrated, correlated approach to obstetrics. In full color photographs (Fig. 4), it tells the story of one young woman's pregnancy from the time of her very first visit to the doctor through every experience of pregnancy and delivery to the time she greets her husband after the baby is born. The theme stresses the wonderful adventure of having a baby, confidence in the physician and the importance of the doctor-patient relationship. Areas where medical opinion may differ are treated by pointing out that each physician is experienced and has a wide armamentarium so each of the doctor's decisions (i.e., choice of analgesia or anesthesia) is based on what is best for the individual patient under the particular circumstances at the time. No faddism is included and no abnormalities of pregnancy are mentioned—not even nausea and vomiting. Somehow patients seem to develop enough symptoms without the help of outside suggestion. These methods of presentation of basic information about pregnancy do much to give the patient background for understanding, and at the same time allow the doctor to utilize his patient contact to interpret each pertinent situation in terms of the particular patient so that it has a personal meaning to her.

Of course, in a practice where the physician sees large numbers of pregnant women, there are certain questions, variations of pregnancy and complications which keep coming up, and repetitively requiring the same explanation from the physician over and over. The superstitions, fears and old wives' tales in connection with childbirth transmitted through the centuries and the apparent delight that neighbors, friends and relatives seem to derive from frightening pregnant women make it imperative that each situation be skillfully handled and the patient fully reassured. While it may be old hash to the doctor, to each patient it is a new question or experience. Once again using the time study approach to eliminate nonproductive repetition, but at the same time preserving the personalized, individualized patient-doctor relationship, a series of supplements[7] to the book which we use have been prepared to cover the common, recurring situations, such as: nausea and vomiting of pregnancy, constipation, hemorrhoids, the Rh factor, cesarean section, diabetes in pregnancy, induction of labor, varicose veins, postpartum instructions, and the like (Fig. 5). Each of these situations must be handled appropriate-

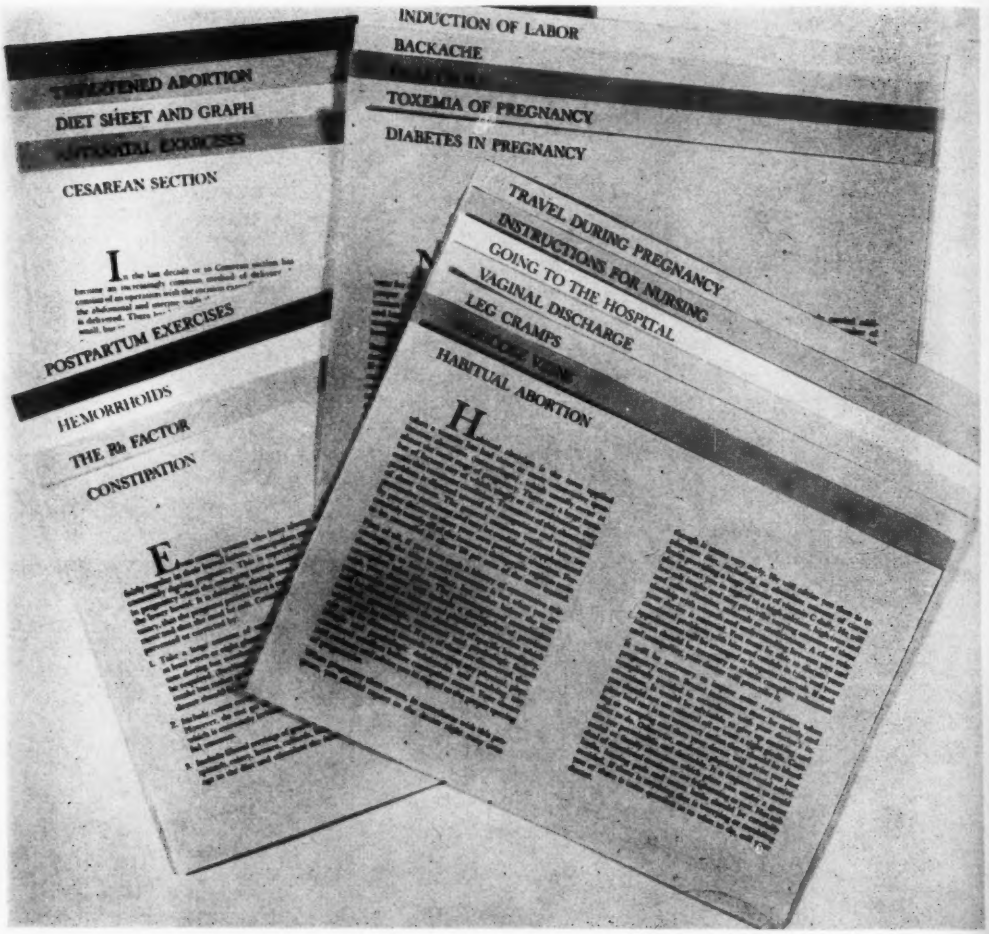
FIG. 4



ly as they arise. Use of an all inclusive encyclopedic prenatal book issued to the patient early in pregnancy is hardly satisfactory for this purpose. A direct explanation or reassurance by the doctor is indicated at the time. By use of a prepared supplement the explanation and reassurance are effectively made with dispatch, but in a personalized way and interpreted in terms of the particular patient so she has the feeling that her doctor has all the time in the world for her personal problems. Furthermore, the transmitted information is explicit and printed so the patient cannot misunderstand or distort in retelling her husband or mother what was said at the doctor's office.

Let's see how this works. Suppose a prenatal patient is found to be Rh negative, of which she had previously been unaware. Having heard so many stories she is a little frightened. The physician sits down with the patient and says simply, "Look, Margaret, many women are Rh negative and have perfectly good babies. We know lots about this condition and what to do about it. We will have to get certain blood tests on both you and Bob, then, depending upon what they show, we may have to get the baby a little early or may not have to do anything at all. Take this sheet home and read it over with Bob." Tearing the supplement on Rh from the pad he hands it to Margaret, "Next time you come in we will answer

FIG. 5



any questions you may have and we will talk about what it means to you." How much simpler and more effective than attempting to go into a wordy explanation of the Rh problem every time this situation presents itself. At the same time the patient and her family have an accurate picture of the facts as a basis for further cooperation with the doctor.

At the conclusion of the prenatal period we come into the next phase of obstetric care, parturition and the period of hospital care. When the time comes for the obstetric patient to be hospitalized at the termination of her pregnancy, it is a requirement of the Joint Commission on Accreditation of Hospitals[8] that the hospital have a complete history and record of the prenatal course. This is usually furnished from the doctor's office. The necessary information may be transcribed from their office records. From information on the self-taking history and prenatal record, any hospital obstetric form can be readily completed. However, should the physician have available a duplicating machine, the history and follow-up forms are run through the machine, the duplicates placed in the office file and the original forms sent to the hospital for incorporation in the hospital record in accordance with J.C.A.H. requirements. Transcription and other secretarial work is markedly reduced.

In addition to the office record, every doc-

tor keeps his own pocket record listing his obstetric patients, their expected dates of confinement and other necessary information. For this reason a looseleaf notebook with special supplementary hospital information sheets has been designed for the physician's pocket (Fig. 6). This notebook contains:

(1) Monthly divider sheets, ruled for listing all the patients who are due that month, showing name, address, telephone number, expected date of confinement and date of delivery. At a glance, this provides the physician with the over-all picture of his practice at any time.

(2) Individual hospital information sheets for obstetric patients. The top half of this sheet contains all the information that the doctor needs when the patient calls on the telephone or when she is admitted to the hospital. It includes patient's hospital preference, her name, EDC, LMP, parity, serology, blood type, Rh type, antibody titer, address, age, phone number and husband's name.

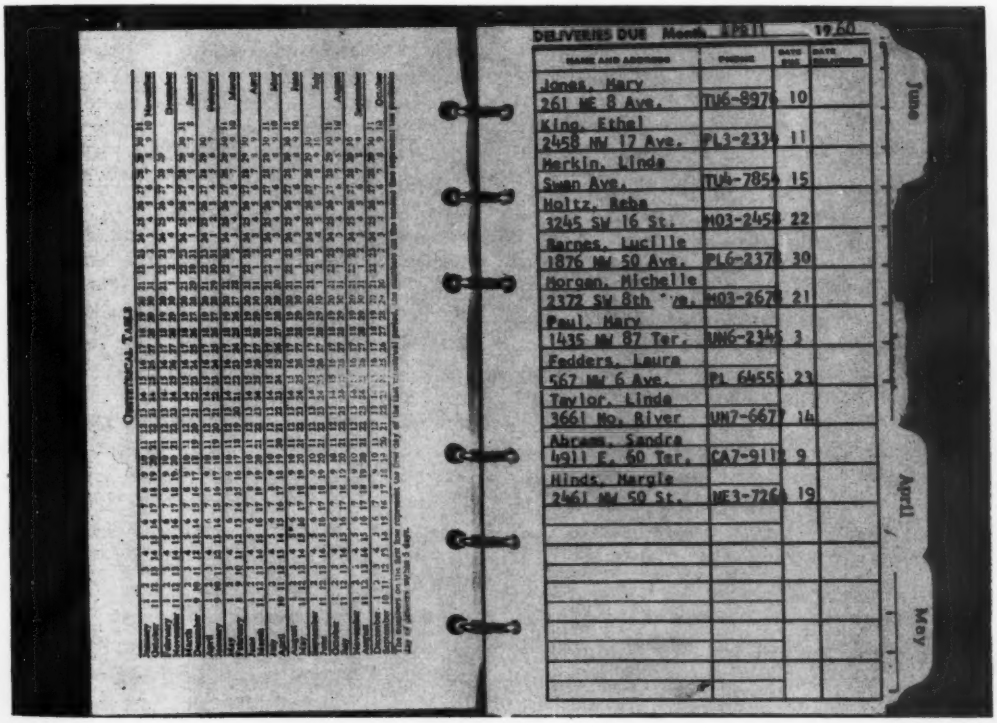
The lower half of the sheet contains information about the delivery which the physician needs to bring back to his office, including: delivery date, sex of infant, birth weight, gestation, onset of labor, analgesia or anesthesia and any other necessary data.

The reverse side of this sheet contains information essential to the economic side of medicine, including: insurance company, contract number, date of admission and discharge, return appointment, prescriptions and other important information.

(3) To complete the notebook there is a gynecology sheet which is comparable to the obstetric sheet, but with information necessary for the doctor to have at his finger tips on his currently hospitalized gynecologic patients.

The notebook is used in the following way: The secretary records the expected date of confinement of each patient on a monthly divider page as patients are registered in the office. She also fills out an individual page with the information needed for the hospital and on the other side the available insurance information. The doctor carries this notebook con-

FIG. 6



taining this information with him at all times. Following delivery in the hospital he fills out the lower half of the sheet with the information on the delivery and then moves the sheet to a section of the notebook reserved for hospitalized patients to be seen by him on his daily rounds. At the time of patient's discharge the doctor fills in from the front sheet of the hospital record any blank spaces on the reverse (or insurance) side of that patient's page in his notebook. After the patient is discharged from the hospital her page is removed from the notebook and the secretary staples this sheet to her prenatal record. Thus, the office medical record of this pregnancy is now complete from beginning to end. The information in regard to delivery may be coded from this sheet to the IBM cards for research analysis whenever indicated.

The third phase of obstetric care covered by the integrated program is the period of postpartum care following discharge from the hospital. When the patient is sent home from the hospital, printed postpartum instructions are handed to her or have already been mailed to her home. These are quite detailed and like the prenatal supplements avoid areas of controversy leaving instructions in these areas to the judgment of the individual physician. They cover not only the immediate postpartum period but also indicate to the patient the necessity for immediate follow-up care and also long-term, periodic gynecologic examinations and cytologic evaluation at regular intervals.

When all the conditions related to her pregnancy and delivery have been corrected, the patient re-enters the sphere of gynecologic care. Obstetrics, of course, is ideal for this type of correlated approach. However, many of these technics can be worked into a correlated, integrated approach and successfully applied in the field of gynecology. Unfortunately, the limitations of time for the presentation of this paper preclude as detailed a description as we have given for the obstetric program. Suffice it to say, similar self-taking histories for evaluation of the gynecologic patient are available. These have been found to work most effectively when the physician records his own summary of the present illness and chief complaint on the lined page provided for this purpose. Printed gynecologic physical examination and follow-up sheet as well as printed explanatory supplements to explain common gynecologic problems, postoperative and other types of routine instructions are available and helpful. In addition, looseleaf notebook pages with special supplementary hospital information for the gynecologic patient are available to fit the pocket notebook described with the obstetric program. After discharge from the hospital this sheet is attached to the patient's history, physical and follow-up data to complete the office gynecologic record in every respect.

Summary and Conclusion

A correlated, integrated approach to obstetrics and gynecology, its applications and advantages have been described. This program is flexible and can be enlarged, modified or changed to meet the particular requirements of the physician or the needs of his patients. For some physicians it may be best that they prepare their own individual program incorporating the basic principles that have been described. It is our intention to keep our program dynamic and up-to-date, consistent with advances in obstetrics and gynecology as they take place.

Because of the details required in this presentation, the casual reader could conceivably interpret this approach as a plea for automation in medicine. Nothing could be further from the truth or more diametrically opposed to my views on medical practice. Instead it is my conviction that under conditions prevailing today only such an approach will allow the physician to provide the highest scientific standard of medical care, at the same time maintaining a completely personal doctor-patient relationship with the greatest degree of individualization.

Addendum

It was interesting to learn[9] only recently of the projected program of the Committee on Maternal and Child Care of the Council on Medical Service of the American Medical Association[10,11] to study pregnancy wastage. This is to be done by analysis of the data collected from 100,000 deliveries through the use of code sheets and processed by the means of modern statistical technics. Careful perusal of their proposed program as outlined indicates that the total approach as described in this paper,

where the emphasis is primarily on the obstetric care outside the hospital and study of data heretofore hidden in the physician's records or not obtained, complements the AMA objectives and might well be used in conjunction with this program.

(I wish to express my thanks to Iris M. Kiem, M.S., M.P.H., biostatistician, University of Miami School of Medicine, for preparing the IBM coding sheet and to the Audio Visual Education Company of America, Inc., for their permission to reproduce copyrighted material.)

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Discussion (Abstract)

Dr. Richard G. Burman, Gulfport, Miss. Obstetrics and gynecology are being changed by advances in other fields and by changes in modern living. The wise physician will accept such changes as seem good.

Dr. Offen has presented his contribution to these changing times in the form of a new self-taking obstetric history form and an excellent atlas of an individual's trip through the prenatal period, the experience of parturition and the very immediate postpartum days.

I am sure that many of you have used self-taking history and information forms in your practice. However, there are certain drawbacks to this innovation. It is apparent that Dr. Offen is a man of precise and orderly conduct, endowed with great organizational ability. His excellent paper and research denotes as well as suggests this. The applicability of the described forms and methods to practices other than clinics and institutions is questionable.

I have used the Cornell information questionnaire in my practice as well as in our local Cancer Clinic. At times, it taxes the ability of the respective secretaries and nurses in aiding certain individuals when filling out this simple yes-and-no form. The entire population is not as literate so Dr. Offen would have us believe.

The practice of obstetrics and gynecology in the smaller community, and I believe that nearly every community, at least in our area of 15,000 or more, is getting trained obstetric help and is built on individual and close doctor-patient relationship. This involves time and thorough history taking. Actually, some forms with their lack of information require more of the obstetrician's time than should he himself do the entire history taking. I notice that Dr. Offen has failed to include a review of the systems in his form. After all, we *do* complete physicals; why not complete histories? How many times have you diagnosed gallbladder disease, duodenal ulcer, colitis, angina, posterior nerve root involvement, Meniere's syndrome, neuroses and psychoses, and/or any other nonobstetric or gynecologic disease and referred the patient for immediate treatment? Why? Generally, because you took a good history.

Dr. Offen mentions the present ten year study by the National Institutes of Health concerning the fetal wastage, prognosis, and development. The Department at Tulane is engaged in this study with others from coast to coast, and the history taking is a tremendous job. The infectious disease and system review is three pages long in itself.

Dr. Offen is to be congratulated on the publication of his picture-story of pregnancy and childbirth—*Adventure to Motherhood*. It is also pleasing that it is not another sales pitch as they are being provided free of charge by a pharmaceutical firm, sans advertising. Dr. Offen is to be further commended in that he left out controversial subjects, abnormalities of pregnancy, and, particularly, present and past faddisms. It is too bad that the popular magazines and Sunday supplements do not do the same. If we have many more articles on the "Wonderful Adventure of Having Our Baby—at Home," we will be forced back to the days that many of us remember, the two big bags of equipment, the copper boiler and sterilization of forceps, Granny pouring the chloroform, or the wild ride to the nearest hospital because the patient abrupted.

Education for childbirth has done much to rid the young primipara of the superstitions, fears, and old wives' tales that she is exposed to by well-meaning friends and relatives. Group education by individuals or organizations outside of the doctor's clinic or office do not appeal to me. If the patient wants to know more about pregnancy and its problems, I want the patient to talk to me or to one of my staff. If we are too busy to do this, we are trying to see too many patients, do too many deliveries, and should either get help or cut down our practice.

I am sorry that Dr. Offen did not include a few more pictures and pages in his *Adventure to Motherhood* such as postpartum exercises, follow-up visits, and the importance of cytologic smears.

There is very little else I can add to Dr. Offen's excellent paper and the obstetric ancillary material presented—"it speaks for itself."

In conclusion I should like to pass on the remarks of the late Dr. Herbert Schmitz when he discussed newer currents in obstetrics—"Each new trend in obstetrics should remind us that our specialty, like any other, is not a static thing. Contemporary thought and motives must ever be afforded at least a dispassionate

consideration, *influenced* by objectivity, experience, and intellectual curiosity. The wise man lives the chronological span concurrently."

Dr. Offen (closing). I wish to thank Dr. Burman for reading this paper, and for coming this long way to make his very kind remarks. His criticism, that a systems review was not included in the obstetric self-taking history is justified and, fortunately, is easily corrected. We shall simply take the systems review from the gynecologic self-taking history and include it hereafter with the obstetric form to correct this deficiency.

I am extremely gratified that Dr. Burman chose to open his discussion with a plea for open-mindedness toward progress and a plea for willingness to accept change and also that he chose to close with a quotation of Dr. Schmitz, exhorting, "dispassionate consideration, influenced by objectivity, experience and intellectual curiosity." No one could ask for more. If these criteria are applied by the many to this total correlated, integrated approach to obstetrics and gynecology, it can then only find its rightful place, if any, in the practice of this specialty.

As to the self-taking obstetric history, as I have indicated, it has evolved much in the last 10 years and will undoubtedly continue to evolve, and I can only assure you that it is not the Cornell Questionnaire. Some physicians will find this particular form useful, still others may require modifications to suit their needs, perhaps others will need to completely fashion their own. I am not primarily concerned with a particular history form but rather with an approach to the patient that is as thorough and complete as it is personal.

In our experience the literacy rate has not presented a major problem among patients in private practice, although we recognize that this may vary somewhat from area to area. However, with an eye to the future, we are completely confident that the literacy rate will continue to improve everywhere and will present less of a problem as time goes on.

I am both a little embarrassed and amused at Dr. Burman being pleased that this "is not another sales pitch." Of course, he is quite right, this is not a sales pitch for anything and you may find yourself, as I did, forced to write your own book and supplements and history sheets. However, I do happen to know that the publisher and the book stores will all be much happier when the supply of "free" books has been exhausted and will be available then only through the conventional sources of supply.

Finally, in closing, I should like to reiterate the major premise of this paper which concurs with that of the discussant and finds us in complete agreement. I refer, of course, to the overriding importance of a completely individual and fully personal relationship between doctor and patient. It seems appropriate to conclude by quoting from a paper entitled "The Professional Responsibility of the Physician" by Dr. Ward Darley, executive director of the Association of American Medical Colleges, published in volume 174, No. 7 of the J.A.M.A. only two weeks ago, ". . . Now, as long as an increase in efficiency can go hand in hand with an increase in effectiveness, there can be no complaint. But it must be recognized that there is a limit to which increased efficiency, at the expense of time per patient, can go without impairing effectiveness. The application of time-saving developments may be reaching the point of diminishing returns, for a certain amount of time per patient is essential, if only to permit the physician to apply his scientific knowledge properly; and there are many who believe that in the hustle and bustle of modern practice we are frequently denying the patient even this kind of time.

"But assuming that the time per patient is just enough to satisfy proper scientific and technical consideration, this standing alone cannot suffice. This is because, in spite of our scientific and administrative progress in the field of medicine, the actual therapeutic value of the inter-personal relationship between the physician and his patient will always stand as an indispensable tool, and if time limitation is allowed to cut down the effective use of this tool, we are led to overemphasize the diagnosis and treatment of disease as such and underemphasize the need for understanding and helping the person in whom disease may be present. . . ."

Catgut Sutures in Corneal Surgery*

SAMUEL D. McPHERSON, JR., M.D., and EUGENE V. GRACE, M.D.,† *Chapel Hill, N. C.*

Nonabsorbable suture material was long a favorite in the closure of surgical or other wounds of the cornea. More recently absorbable sutures have seemed to be satisfactory. The authors give their results with catgut sutures.

FOR MANY YEARS ophthalmologists used silk sutures almost exclusively in operations on the anterior ocular segment, reflecting the preference of most general surgeons for nonabsorbal sutures. Following the improvement and standardization of catgut which occurred in 1941, this suture material came into use in the closure of cataract wounds.[1] This was first proposed by Hughes[2] and has received rather wide acceptance.[3,4] Improvement in the quality of needles and diminution in the caliber of sutures available subsequently led to the limited use of catgut sutures in the closure of corneal wounds.[5,6]

Due to the inherent advantages of sutures which do not have to be removed in the closure of corneal wounds, we have used plain and chromic catgut sutures in the repair of corneal lacerations and in lamellar and penetrating keratoplasties. It is the purpose of this paper to report the results of the use of absorbable sutures in 47 patients with corneal lacerations and in 23 patients on whom keratoplasty was performed. Some of these operations have been reported previously.[7]

In the Repair of Corneal Lacerations

Since Jan. 1, 1956, we have used plain and chromic catgut sutures in all patients presenting with corneal lacerations. In 47 patients only clear cornea was involved in the laceration and the records of these patients were selected for analysis. Twenty-eight lacerations were closed with chromic catgut sutures and 19 with plain. The youngest patient operated upon was 2 years of age and the oldest was fifty-nine.

Surgical Technic. Immediately after admission to the hospital each patient was taken to the operating room, and with the usual sterile precautions the corneal wound was approximated with direct sutures of 6-0 plain or medium chromic catgut. Sutures were passed through half the corneal thickness, and an attempt was made to include not less than 1 mm. of corneal tissue on either side of the wound. Sutures were placed approximately every 2 mm. along the length of the entire wound and all sutures were tied triply. The remainder of the procedure was done in the usual manner with iridectomy or lavage of the lens as indicated. The eye which was operated upon was dressed with antibiotic and cycloplegic ointments. Dressings were changed daily and most patients were discharged from the hospital on the seventh postoperative day.

Postoperative Course. In 33 patients the postoperative course was uneventful. In 7 patients enucleation was subsequently necessary. Two enucleations were done the third postoperative day for purulent endophthalmitis, 3 were done for phthisis bulbi, one for an injury 6 months later and one because the patient lost light perception on the tenth postoperative day.

Several patients complained of moderate local irritation for a few days after operation. However, in no case was this severe enough to necessitate removal of sutures. In 4 patients one suture became untied and was removed. In a fifth patient, removal of sutures was undertaken because the suture ends seemed to lie directly in the lips of the corneal wound. Following this the anterior chamber collapsed but reformed within 24 hours. One patient developed a hemorrhage in the anterior chamber which cleared within 48 hours, and one developed sympathetic ophthalmia 7 weeks

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after operation. This cleared quickly with local and systemic steroid therapy.

The technical results attributable to the use of catgut sutures are shown in table 1. Corneal scarring was considered to be moderate in 32 cases and minimal in 11 cases. Anterior synechiae of iris or lens capsule to the wound was present in 11 cases and vascularization of the corneal wound in 10 cases. There was one instance in which the anterior chamber became shallow in the postoperative course and this occurred following suture removal. There was no other instance of shallow or flat anterior chamber and, in no case, did wound separation, prolapse of the iris or stitch abscess occur.

In Keratoplasty

In the corresponding period of time we have used plain and chromic catgut sutures in 23 keratoplasties. Nineteen of these were penetrating and 4 were lamellar grafts. The smallest graft done was 7.5 mm. and the largest was 10 mm. The grafts were done for a variety of disorders including metaherpetic keratitis, keratoconus, Fuchs' dystrophy and corneal scarring following a previously unsuccessful graft. Three grafts were done for perforating corneal ulcers and in these glycerol frozen donor material was used. Chromic catgut sutures were used in 13 operations and plain in 10.

Surgical Technic. All operations were done under local anesthesia with a modified Van Lint lid block and retrobulbar injection of 2 cc. of 2% xylocaine containing 7 T. R. units of hyaluronidase. Both lamellar and penetrating grafts were done with technics previously described by us.[7] The donor material in each instance was placed in a glass-capped weighing bottle containing the patient's serum while the recipient wound was being prepared. Grafts were sutured directly into place using 6-0 sutures of the selected material. An attempt was made to place the suture through half the thickness of donor and recipient cornea and to include approximately 1 mm. of tissue in each bite. All sutures were triply tied so the cut ends lay at right angles to the axis of the wound.

Dressings were changed daily after operation, and patients were discharged from the hospital on the twelfth postoperative day.

Postoperative Course. This was uneventful in all but one patient. In this patient a penetrating graft, utilizing glycerol frozen donor material was done for a perforated corneal ulcer. On the third postoperative day, wound separation developed as a result of large hemorrhage in the wound occurring at the site of preoperative vascularization in the recipient cornea. A secondary repair was done using 6-0 plain catgut sutures, and subsequent wound healing was uneventful.

Several patients complained of the sensation of a foreign body when the sutures remained in place for prolonged periods of time. Two sutures which remained in place for 64 days were removed for this reason, and one suture which came untied at 28 days was removed.

The remainder of the complications are summarized in table 2. Vascularization of suture tracks occurred in 8 patients and vascularization of the graft in 5 patients. All of these 5 patients had preoperative vascularization of the recipient cornea. Anterior synechiae occurred in 5 patients but in only one patient was synechiotomy necessary. One patient developed a shallow anterior chamber on the twelfth postoperative day, and this cleared quickly with pressure dressings. One patient developed a filtering bleb at the limbus from a deeply placed suture brought out through the sclera, but this has proved of no

TABLE 1

TECHNICAL RESULTS IN 47 CORNEAL LACERATIONS REPAIRED WITH CATGUT SUTURES

	Number	*Per Cent*
Moderate scarring	32	74
Minimal scarring	11	26
Anterior synechiae	11	26
Vascularization of scar	10	23
Shallow anterior chamber	1	2
Flat anterior chamber	0	0
Wound disruption	0	0
Enucleated prior to final result	4	9

TABLE 2

COMPLICATIONS IN 23 KERATOPLASTIES WITH CATGUT SUTURES

	Number	*Per Cent*
Vascularization of suture tracks	8	35
Anterior synechiae	5	21
Vascularization of graft	5	21
Shallow anterior chamber	1	4
Flat anterior chamber	0	0
Wound disruption	1	4
Filtering bleb	1	4

FIG. 1, A

Seven mm. corneal laceration repaired with two 6-0 plain catgut sutures.

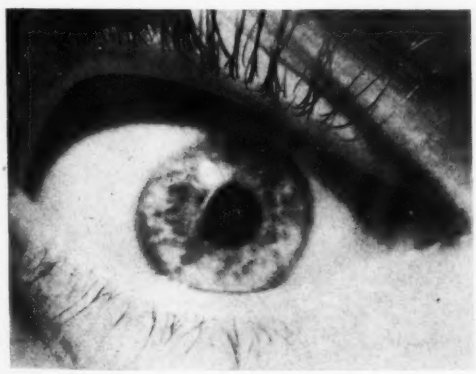
consequence. There was no other instance of flat anterior chamber or wound disruption.

Discussion

The advantages of absorbable sutures in the closure of clear corneal wounds are apparent to most ophthalmologists. The removal of silk sutures from corneal wounds is a procedure which is at times more difficult than the initial operation and one which at times may lead to flat anterior chambers or actual wound disruption. In children the removal of silk sutures from corneal wounds usually necessitates a second general anesthetic with the attendant risks that most of us would like to avoid. Most of these difficulties can be avoided with the use of catgut sutures.

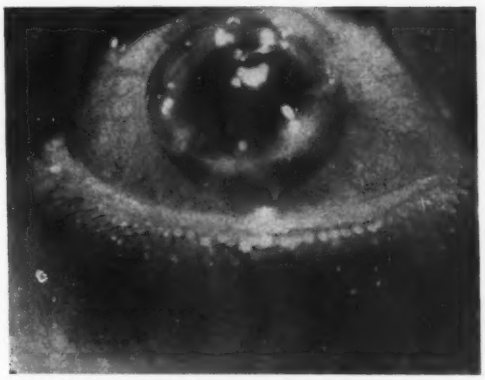
Ophthalmologists have been reluctant to use catgut sutures in corneal surgery despite the fact that sutures of similar material are

FIG. 1, B



One month postoperative showing small amount of corneal scarring.

FIG. 2, A

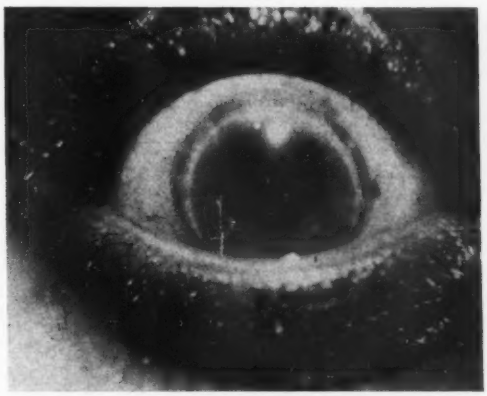


Four days after a 9 mm. perforating corneal graft. All 6-0 plain catgut sutures are in place.

now widely used in muscle and cataract surgery. The general feeling seems to be that catgut sutures in clear cornea may produce undue corneal scarring, unpredictable wound healing and may disappear at irregular intervals.

In our hands the first two of these objections have been unfounded. The amount of crosshatch corneal scarring that has occurred has been no more marked than we have experienced with the use of silk sutures (Figs. 1 and 2). In addition, wound healing has been as good as we experienced with silk in similar wounds and better in that the wounds need not be disturbed for secondary removal of sutures. The single fact that 47 corneal lacerations have been repaired with no single in-

FIG. 2, B



Three months postoperative showing small amount of corneal scarring.

stance of wound disruption indicates that healing in wounds repaired with this material is satisfactory.

We have previously reported studies of the rate of disappearance of plain and chromic catgut sutures from clear corneal wounds.[7] At that time we reported that with plain catgut the time of disappearance of the suture varied from 5 to 38 days and with chromic catgut from 8 to 64 days. The average time of disappearance for plain catgut was 15 days and for chromic catgut 28 days. In the present series, disappearance time was found to roughly parallel that of the original series. Again it was found that the time of suture disappearance was unpredictable. However, it was necessary to remove one or more sutures from only 5 of 47 patients with corneal lacerations and 4 of 23 patients with corneal grafts. In no instance did sutures disappear so quickly that wound separation occurred.

In our hands the use of catgut sutures in the repair of clear corneal wounds has been a satisfactory procedure which has eliminated many of the complications encountered with silk.

Summary

1. The results of the use of plain and chromic catgut sutures in the repair of 47 corneal lacerations and 23 keratoplasties are reported.

2. No instance of poor wound healing occurred that might be attributed to the use of these sutures.

3. Catgut sutures are proposed as a substitute for silk in the repair of clear corneal wounds to eliminate the necessity for suture removal with its consequent hazards.

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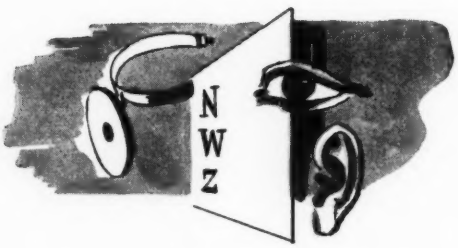

Psychosomatic Allergy*

GEORGE J. STUART, M.D., *Washington, D. C.*

THIS IS AN AGE OF LUNAR SPUTNIKS. It is an age of rapidly changing concepts in all fields of endeavor. In medicine, too, there have been many changes, one of which has been a wide swing toward psychic interpretation, as the cause of many diseases. How has this effected the field of allergy? There is a minority of physicians who are very vocal, attempting to seed both the lay minds and the medical with the idea that all allergic symptoms are induced primarily by psychologic imbalance. For example, they have claimed that asthma, specifically, is caused by psychologic influences and is the causative factor for the first time in many patients. These claims that disturbances of an emotional nature cause repeated secondary episodes of asthma are made by psychiatrists and allergists, which are generally accepted. There are few physicians who treat allergic diseases who would deny that emotional imbalances are in some way related to this group of illnesses. However, many competent physicians seriously question the sweeping generalizations that asthma arises primarily in mentally disturbed patients. There are many of us who know from actual experience in private practice that the greater number respond readily when treated strictly on an allergic basis.

What are the theories that the psychiatrists and the analytic oriented allergist offer to support their views? The question we must ask ourselves is, how scientifically valid are they?

There is the theory of fear of separation from the mother supported by Weiss,[1] French,[2] Miller, and Baruch.[3] French and others[2] studied eleven patients for six months without adequate controls and admitted to the theoretical nature of much of their data, but the material presented and the conclusion derived from this group is unsatisfactory. Miller and Baruch[3] reported 98% of a group were maternally rejected and could not express their hostility and by turning it inwardly precipitated their attacks. These conclusions have been questioned because of the largely subjective nature of the material, which depends on the interpretation of play and the assumptions that certain behavior is linked with certain emotions and that the asthma attacks are causally related to the particular mother-child relationship. Jessner and associates[4] agreed with Miller and Baruch but felt it was only one aspect of a complex relationship.

Two prominent psychiatrists, Ziskind[5] and Levy,[6] have commented on the fallacy of maternal rejection and noted that in itself maternal rejection is a universal characteristic of our society. All of us have been accepted and rejected by our parents at different times. Although the problem becomes one of quantitive evaluation, there are no such means available for accurately measuring these phenomena.

Another theory, presented by Bacon,[7] is that asthma, caused by a neurosis, is a response to unconscious fears of assault upon the respiratory apparatus, and the physiologic changes that accompany it are attempts to ward off that assault. Aggressive excretory fantasies sensitize the respiratory tract and asthma can be precipitated by aggression from a primitive superego or from an environmental equivalent.

Abramson,[8] on the basis of psychoanalytic studies of allergic individuals, postulated the syndrome of engulfing parents. He feels that the theory of maternal rejection often is not only incomplete but may frequently be misleading in the attempt to understand and treat the severe and protracted allergic manifestations in children and adults. In some cases where the allergic process persists, as in severe eczema or uncontrollable asthma, the disturbance in the parent-child relationship is not parental rejection but rather mutual engulfment. Rejection subsequently may ensue, when mutual engulfment fails to satisfy the patient's needs.

Wolf felt that the allergic reaction of the upper respiratory tree is a defensive one of

*Chairman's Address, read before the Section on Allergy, Southern Medical Association, Fifty-Third Annual Meeting, Atlanta, Ga., November 16-19, 1959.

shutting out by bronchospasm and washing away by excretion.

The separation of parent and child has coined a denotation by Peshkin[9] of parentectomy. Here chronically ill, incapacitated children had spent several years at a home in Denver and had returned improved. It showed the need for separating these ill children from their parents. Were the results, however, all due to psychosomatic changes or to other factors as well?

Do we really have a characteristic allergic personality which is basically one of a disturbed emotional individual? I believe we do not and my experience leads me to feel that in spite of the disturbed personality, the illness can be helped by basic immunologic methodology in the majority of cases.

Let me cite a few examples for you, which I have gathered at random from my practice. Some of these individuals were first treated by the usual tried methods, and then their emotional backgrounds were later studied and recapitulated.

These are three cases of severe chronic urticaria which by their duration of over six months would lead one to believe that they were basically emotional.

First, a severely depressed minister, Mr. E. L., in his late sixties who had lost his wife, his original home, and had remarried. He was very unhappy with his new home and his marriage. He felt extreme guilt about having remarried. Yet on an elimination diet, he was found sensitive to wheat and his hives completely cleared, but his depression continued. I was unable to change that phase one iota.

Second, a girl of 12, J. S., immature for her age, an over-protected, easily upset, sensitive, only child, was found to be allergic to aspirin; all her urticarial symptoms disappeared upon its elimination. Again nothing was changed about her unfortunate emotional problems.

Third, a physician's wife, Mrs. J. A., had been badly injured in an automobile accident and had had a severe concussion and fractured pelvis. Rehabilitation was slow and painful. Her husband coerced her into returning to his office to help him and to type all of his correspondence. He felt this would be important for her rehabilitation. When interviewed she was very hostile toward him for doing this and it was again expressed when I called him into the office to hear her side of the story. I felt sure the cause must be emotional. He became very angry and I was forced to try a new track to gain time, and started her on elimination diets. These were of no avail and I could not get through to her husband to allow her to go at her own pace. In desperation the thought did occur to me to try the infectious angle. I convinced her husband that we should have another physical examination with urine and blood studies, which he opposed at first as this had been done just a month ago. To my surprise, we found her urine loaded with white cells. Her hives promptly cleared on treatment with Gantrisin as her urine returned to normal. In going back over her history she had trouble with her bladder following the automobile accident, but at the time she was seeing me, had not had any recognizable symptoms.

The next case is that of Mrs. B. H., a 34 year old housewife, who had severe bronchial asthma for several years. Studies revealed pollen sensitivity during the entire summer months, with difficulty with dust in the winter. She was started on immunization and responded promptly and has continued to do so for over a year and a half. In going back over her history, I found out she was a chronic alcoholic, disliked and rejected by her husband and was having an extramarital affair for the past three years. She has two children. In spite of all this and severe feelings of guilt, she responded well to treatment. Here again nothing had been done concerning her difficult psychosomatic problems before her asthma was treated.

Then there is Mr. J. E. who had had bronchial asthma for the past 20 years. However, during his greatest emotional distress, which lasted about two years while struggling for a divorce, he was free of asthma. Last year his hay fever and asthma returned to upset him a great deal and he began treatment because of this. This pollen season he has done very well with immunization. Again in this case, it is difficult to explain on a psychosomatic basis why there were no hay fever or asthmatic symptoms during the time that he was having most of his emotional turmoil, and was having symptoms when he was relieved of these.

Another case of severe bronchial asthma in

Miss A. G., a single government secretary, who had enjoyed living abroad but had a great deal of asthma while there. She was transferred to Washington, D. C., which caused her a great deal of unhappiness and frustration. She had very few dates in this city, over-populated with girls. In Europe this was no problem and she had been happy there. Her asthma, which had started as a seasonal grass problem, became perennial when I saw her. With intensive immunization to dust, mold, and grasses, her asthma was brought under excellent control without any psychic therapy.

Finally, one case of severe allergic rhinitis in Mrs. E. H., who is very unhappily married and who has constantly thought of leaving her husband because she could not get along with him and who treated her with complete indifference. He even kept a dog in their bedroom, because he knew it disturbed her a great deal. She was brought under control with dust, mold, and dog dander. Although she is still very unhappy in her domestic situation, she is free of nasal symptoms.

This is not to imply that the psychic factors do not influence allergic illness. There is a very close relationship between soma and psyche. The patient deserves the relief he might obtain from an allergic investigation, immunization, and medication. The focusing of his attention only on emotional factors in his illness may direct the patient away from adequate medical treatment. The protracted allergic illnesses are basically immunologic problems, but if during the course of treatment, these immunologic problems are inadequately resolved, the entire picture might be distorted due to psychologic disturbances which secondarily intervene. It is important to pay attention to the entire individual body and mind and not just one aspect.

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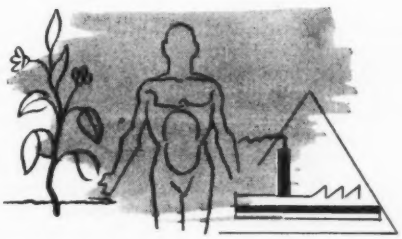

CASE REPORT

Pseudoxanthoma Elasticum Associated with Mitral Valvular Disease*

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PSEUDOXANTHOMA ELASTICUM has long been recognized as a systemic disease involving primarily the skin, gastrointestinal tract, eye, and cardiovascular system. The cardiovascular involvement is manifested by weakness or absence of peripheral pulses, intermittent claudication, premature medial calcification of peripheral arteries, coronary artery insufficiency, hypertension, and congestive heart failure. Valvular involvement of the heart is seldom mentioned. We describe here a patient with pseudoxanthoma elasticum and mitral valvular disease and comment on a possible relationship between these two entities.

Case Report

This 19 year old white woman had had easy fatigability and exertional dyspnea since early childhood. From age 14 until 17 she had three episodes of cardiac failure which necessitated hospitalization. In January 1955, she was referred to the National Children's Cardiac Hospital in Miami, Florida, for more definitive diagnostic studies. At that time she was found to have generalized cardiomegaly with a harsh flowing systolic murmur at the apex transmitted to the axilla and a nonradiating mid-diastolic apical rumble. The clinical impression was rheumatic heart disease with predominant mitral insufficiency and mild mitral stenosis.

Her hospital course was complicated with recurrent episodes of paroxysmal atrial tachycardia which did not respond adequately to digitalis, Procaine amide HCl cortisone, or quinidine therapy; it was finally controlled on a combination of digoxin and reserpine. After months of bed rest she was discharged essentially asymptomatic. The patient apparently continued to do well until mid-May 1957, when she gradually developed increasing extertional dyspnea, orthopnea, abdominal and pedal edema, palpatation, nausea, vomiting, and a nonproductive cough. She was admitted on June 2, 1957, in acute congestive heart failure.

She was an undernourished, chronically ill, cyanotic white woman in severe respiratory distress. Vital signs were: B.P. 110/80, P. 180 per minute and regular, T. 98.6°. Fundoscopic examination revealed angioid streaks radiating from the optic disk and old focal areas of chorioretinitis bilaterally. There was venous distension in the neck. Scattered crepitant basilar rales were heard in the lungs. The P.M.I. was in the sixth intercostal space at the anterior axillary line. No thrills were palpable. P_2 was split and greater than A_2. There was a grade IV harsh systolic blowing murmur at the apex transmitted to the left axilla and a nonradiating mid-diastolic decrescendo murmur at the apex. The mitral first sound was not increased and there was no opening snap. The liver edge was palpable, 4 fingerbreadths. There was 1+ pitting edema of both ankles. The peripheral pulses were normal. The skin of the neck was lax and slightly redundant. There were many linear 3 by 4 mm. yellowish papules arranged parallel to the skin folds on both sides of the neck and coalescing in some areas to form short streaks.

Roentgenograms showed diffuse cardiac enlargement with bilateral pulmonary congestion. The ECG. on admission revealed a supraventricular tachycardia, ECG.'s after conversion to a normal sinus rhythm showed prominent peaked P waves in standard lead II with the precordial leads compatible with left ventricular hypertrophy. Pertinent laboratory findings were as follows: Hgb. 15 Gm. per 100 ml.; RBC. count 4,900,000 per cu. mm.; E.S.R. 12 mm. per hr.; WBC. count 13,200 (seg. 60%, band 6%, eos. 6%, lymph. 26%); urinalysis—color amber, pH acid, 1+albumin, negative sugar, microscopic 8 to 10 WBC. per hpf., occasional RBC.; circulation time 40 seconds; serologic tests for syphilis negative; fasting blood sugar 90 mg. per 100 ml.; serum protein 6.40 Gm. per 100 ml. with an a/g ratio of 3.29/3.01; antistreptolysis titer 1:00; C-reactive protein 1+; urine and blood cultures negative.

The patient had repeated episodes of supraventricular tachycardia during her 5 months of hospitalization. After repeated trials of various medications it was found that a combination of reserpine and digitalis was the only consistently successful regimen to control the heart rate. It is interesting that during an attempt to push reserpine dosage to a maximal effective limit the patient developed basal ganglion signs consisting of involuntary resting tremors, urinary incontinence, and emotional lability which disappeared on lowering the reserpine dosage. Roentgenograms showed a cardio-

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thoracic ratio of 16 to 26 with definite evidence of right ventricular enlargement, minimal left ventricular enlargement, and increased pulmonary vascular markings. There were no calcifications within the valves. Fluoroscopy confirmed this with the added observation of left atrial enlargement. A skin biopsy showed a scant perivascular infiltrate of chronic inflammatory cells in the papillary dermis and upper reticular dermis. In the middle to upper third of the reticular dermis the normal collagen pattern was obscured by granular fibrillary clumped fibers and dark blue almost opaque crystalline material. The lower third of the reticular dermis was normal in appearance. The histologic findings of this biopsy were consistent with the diagnosis of pseudoxanthoma elasticum.

The patient was placed on absolute bed rest, low sodium diet, reserpine and digitalis. She gradually became asymptomatic and was discharged on Oct. 28, 1957. The final diagnosis was pseudoxanthoma elasticum, mitral valvulitis (insufficiency and stenosis), and recurrent paroxysmal supraventricular tachycardia.

Discussion

The most prominent cardiovascular manifestations of pseudoxanthoma elasticum are related to the pathologic involvement of the arterial system, primarily the so-called muscular arteries. These changes consist of degeneration of connective tissues in the arterial walls with secondary calcification and subsequent decrease in the caliber of the lumen of the affected vessels. Whether the basic tissue defect is in the elastic or collagen fibers is still unsettled. McKusick[1] offers evidence that this is primarily a dystrophy of collagen fibers. Whatever their origin, characteristic histologic changes have been described in the coronary, renal, pancreatic, uterine, cutaneous, mesenteric and cerebral arteries.[2] Dilatation of the aorta is also a frequent occurrence.[3] The most common cardiovascular changes described in the literature are those of intermittent claudication, absent or decreased pulse waves in the extremities, premature calcification of the peripheral vessels as shown by x-ray and angina pectoris. Hypertension is also found in many of the reported cases[2,4,5] which left ventricular enlargement and cardiac decompensation being attributed to the diastolic overload on the myocardium.[6] Many of these patients had systolic murmurs.[6]

Our patient is interesting because her complaints were those of mitral valvular disease associated with recurrent congestive failure and episodes of paroxysmal tachycardia. Although it is realized that the mitral insufficiency and stenosis seen in this patient may have a cause quite unrelated to pseudoxanthoma elasticum, there is clear evidence in the literature that valvular involvement may be a genuine component of this disease. This could not be proved in our patient without histologic examination of the cardiac tissues. Both endocardial and pericardial lesions histologically resembling the changes seen in the skin have been described. In 1884, Balzer[7] reported on the autopsy findings of a 49 year old mason with pseudoxanthoma elasticum and advanced pulmonary tuberculosis. He found a whitish-yellow thickening of the right endocardial surface of the heart as well as several plaques on the trabeculae of both ventricles and on the pericardial surface, which histologically showed degeneration of elastic fibers. McKusick[1] described a 63 year old Negro with pseudoxanthoma elasticum who died from accidental mercury poisoning. This patient had a loud blowing apical systolic murmur and numerous extrasystoles. At autopsy, the heart did not appear to be enlarged, however there was a yellowish thickening of the endocardium of the right atrium with peculiar nodular thickenings over the trabecular ridges. The posterior leaflet of the tricuspid valve had a smooth thickened, firm, rolled edge without excrescenses. The aortic leaflet of the mitral valve was similarly thickened at the edge and had marked calcific changes at its attachment. Histologically these changes were similar to those of Balzer's case. In 1901, von Tannenhain[8] described the autopsy findings on a 48 year old woman with pseudoxanthoma elasticum. At autopsy she had a chronic mitral endocarditis, myocarditis and generalized arteriosclerosis. Unfortunately no clinical data were given in this report. Another autopsy study by Prick,[2] in 1938, described a patient with cardiac hypertrophy and thickened mitral valves with yellow-white patches along the surface of the valves. Finally Böck,[9] in 1938, described a patient (Case 1) with auscultatory mitral stenosis and pseudoxanthoma elasticum.

The above pathologic and clinical findings strongly suggested that valvular disease can occur as a basic defect in pseudoxanthoma elasticum. It remained for Coffman and Sommers[10] to demonstrate beyond any doubt that this thesis is tenable. They reported the clinical and postmortem findings in a patient with pseudoxanthoma elasticum, who died in congestive failure due to mitral stenosis. Histologic examination of the heart revealed degeneration of elastic tissue in the endocardium of

the left atrium and in the valves and no evidence for rheumatic heart disease. The skin, blood vessels, and kidney sections also showed the changes of pseudoxanthoma elasticum. Five of their patient's 6 children were available for skin biopsies and all demonstrated some degree of elastic tissue change consistent with pseudoxanthoma elasticum. Three of the children also had evidence of valvular heart disease. Pseudoxanthoma should therefore be considered as a possible etiologic factor in obscure cases of valvular heart disease.

There is one final point in our patient's history which deserves comment. Episodes of repeated paroxysmal tachycardia resistant to therapy such as this patient experienced have not been previously reported.

Summary

A patient with pseudoxanthoma elasticum and mitral valvular disease is reported; a probable etiologic connection between these two entities is suggested.

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Discussion (Abstract)

Dr. A. H. Conrad, Jr., St. Louis, Mo. Mr. Chairman, I should like to start by congratulating Dr. Derbes on his excellent paper. As you know, it is difficult to discuss a paper such as this, since it presents nothing but irrefutable facts and observations. However, I do believe that it serves to add to our cognizance of the many systemic diseases and disorders which are often first signaled by cutaneous manifestations. It is in these disorders that a dermatologist may show that the practice of dermatology is not one of self-limited diseases which routinely respond to lotions, salves and creams, as has been indicated by cartoons and jokes for many a decade. By careful observations made by students such as Dr. Derbes and others, we have learned to suspect and even to recognize many disorders which have not as yet shown the classic symptoms and signs.

Probably the most widely known of these is acanthosis nigricans, which can occur in patients suffering from abdominal malignancy. Then, there is the oral melanosis associated with generalized intestinal polyposis, as described by Jeghers. The eruption of pellegra, the ulcers of diabetes, the cafe au lait spots and the tumors of Von Recklinghausen's disease, the pruritis of early icterus, and blood dyscrasias are only a few of the many known. We could go on for quite a while listing such others as adenoma sebaceum and urticaria pigmentosa, but more important is the point in question that each eruption of the skin must be considered in the light of the entire patient and not as a disease of the skin alone.

This paper should also point out to the internist that where intermittent tachycardia exists a search should be made for lesions of pseudoxanthoma elasticum. Of course, in the final analysis it remains for autopsy to prove the connection.

In closing, I again wish to express my thanks to Dr. Derbes for his fine work and excellent presentation.

Lymphosarcoma of the Stomach:

A Review and Analysis of Twenty-One Cases

JAMES L. GUEST, JR., M.D.,† *Nashville, Tenn.*

The importance of diagnosis is stressed for this rare gastric tumor. Its sensitivity to irradiation makes a diagnosis imperative, even in the inoperable tumors encountered at laparotomy. Many years may be added to the patient's life by proper management.

Introduction

IN JANUARY 1832, Thomas Hodgkin first recorded his observations on lymphoid tumors. In the second half of the nineteenth century, with greater emphasis on basic pathology, the total concept of primary lymphoid neoplasms evolved. Virchow first used the word "lymphosarcoma" in 1863. Sternberg and, later, Reed first described and segregated Hodgkin's disease from the general class of lymphoid tumors in 1898. As experience accumulated it became apparent that this class of diseases could present a great variety of clinical and pathologic manifestations. At the turn of the century no intelligent effort at treatment had been made. As surgeons developed in their art and became less fearful of the serous cavities, the idea of resecting localized forms of intestinal sarcoma developed. Early attempts were accompanied by disappointment and failure.

The first apparent successful extirpation of a lymphosarcoma of the stomach was in 1914. The patient was reported well and free of recurrent disease 19 years later by Jones and Carmody.[1] Since then numerous separate small series of cases have been reported. This paper is a general review of the entity and a summary of the entire experience of the Vanderbilt University Hospital and the Thayer Veterans Administration Hospital, Nashville, Tennessee, from the year 1948 through 1959.

Classification of Lymphoid Tumors

The effort to classify these neoplasms began in the late 1800's and continues to the present day. No single clinical or pathologic classification has appeared which is universally applicable. The lymphoid tumors are now thought by some to represent a continuum of separate interrelated diseases. Two or more different cell types may frequently be observed in the natural course of the disease in the same patient.[2]

Some pathologists group all types of lymphoid neoplasm together, calling them simply lymphomas. Still others find microscopic criteria for forming many different categories, using descriptive terms such as small cell lymphosarcoma, large cell lymphosarcoma, lymphoblastic lymphoma, follicular lymphoma, etc. The fundamental controversy centers around the question of whether the reticulum cell and the lymphocyte have a common progenitor or whether they represent a separate and distinct cell type. For clinical purposes the following classification is simple, straightforward and widespread in use:

1. *Lymphocytic lymphosarcoma.* In this tumor the cellular infiltrate is composed of mature lymphocytes. The cells are small or medium sized, measuring 4 to 5 micra in diameter. The nuclei contain darkly staining chromatin and one to two nucleoli. There is a narrow rim of dark blue cytoplasm.

2. *Reticulum cell sarcoma.* The cells in this neoplasm are larger, measuring from 12 to 16 micra in diameter. The nucleus is larger and paler staining with eosinophilic nucleoli. The cytoplasm is more abundant and often irregular. It is quite eosinophilic. Reticulum fibers can be seen sometimes in abundance, especially if special stains are used.

3. *Hodgkin's disease.* This tumor shows mixtures of both large and of small cell types and the large, multinucleated Reed-Sternberg cell. Hodgkin's disease is also characterized by considerable fibrosis and large numbers of

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TABLE 1

Lymphosarcoma of the Stomach Cell Type	
Lymphocytic lymphosarcoma	10
Reticulum cell sarcoma	9
Hodgkin's disease	2
Total	21

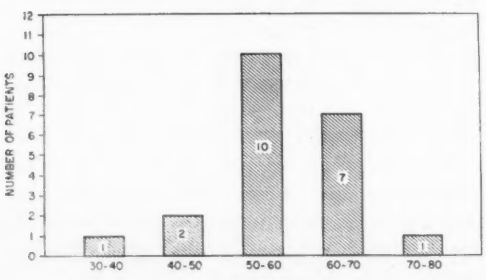
eosinophils and plasma cells. In gastric tumors the presence of the latter two cell types is difficult to interpret because the normal gastric mucosa often shows disproportionately large numbers of these cells.[3]

Relative Frequency

The relative frequency of each cell type in lymphoid tumors varies considerably in each series according to the type of pathologic classification used. Generally lymphocytic lymphosarcoma is most common, followed by reticulum cell sarcoma and Hodgkin's disease in descending order of frequency. Table 1 shows the distribution of our cases according to cell type.

Lymphosarcoma constitutes from 2 to 5% of all malignant neoplasms of the stomach, according to most series.[3-6] It occurs from 1.5 to 2 times more frequently in men than in women. Our series shows a preponderance of males because many of our cases are veterans who are all men. The majority of individuals afflicted with these tumors fall into the 40 to 60 year age group corresponding generally with the age group of gastric carcinomas. Lymphosarcoma may, of course, occur at any age and, indeed, if a large gastric mass is present in a younger person, one should think of a mesodermal tumor. In our group of 21 patients the youngest was 32 years of age, the eldest, 73 years old, with an age distribution as shown in figure 1.

FIGURE 1. AGE INCIDENCE IN PRIMARY LYMPHOSARCOMA OF THE STOMACH



Pathology

A. *Basic Lesion.*. Anatomically the mucosa of the stomach is permeated with tiny lymphatic trunks which drain into a prominent submucosal plexus. Collecting trunks pass from this plexus through the muscular layers of the stomach into another plexus in the serosa. From here the lymphatic pathway proceeds to the regional nodes.[7,8] The lymphosarcoma usually begins with the development of a cellular infiltrate in the submucosa. The tumor expands in the submucosa forming a soft infiltrate which displaces the surrounding tissues rather than destroying them. Fibrosis occurs very late. The muscularis mucosa is preserved even with extensive infiltration. For these reasons such things as perforation, massive hemorrhage and obstruction, so common in gastric carcinoma, are not seen until quite late in lymphosarcoma of the stomach. The clinical phenomena presented depend upon the manner in which the infiltrate in the submucosa expands.

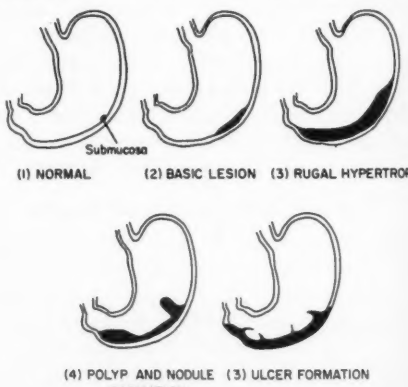
B. *Gross Pathology.* (Fig. 2) The tumor may present three basic lesions. Often an individual tumor may present a combination of any or all of the following separate processes:

1. A diffuse permeation through the stomach lining dissecting the mucosa from the muscle layers, often presenting as a marked hypertrophy of the rugae of the stomach.

2. A more localized growth causing the mucosa to project into the gastric lumen forming polypi and nodules.

3. A rapidly growing infiltrate which

FIGURE II. PATHOGENESIS OF PRIMARY LYMPHOSARCOMA OF THE STOMACH



interferes with the nutrition of the mucosa, causing single or multiple ulcerations.

The submucosal extension of the growth may extend beyond the pylorus. As was shown by Martin,[9] a large proportion of lymphomatous tumors (25%) cross the pyloric channel to involve the duodenal lymph nodes. In carcinoma extension across the pylorus is less likely to occur (5%).

These tumors are usually of a rubbery, firm consistency. On section they vary from light yellow to gray in color. Necrosis and hemorrhage are distinctly uncommon. There are no gross features which suggest a specific cell type. All of the three main varieties of lymphoma may look exactly alike or may resemble carcinoma.

The most important point to be emphasized is that these tumors often cannot be differentiated from carcinoma, especially the softer varieties of polypoid carcinoma or the linitis plastica type of cancer. The simple procedure of biopsy may determine whether or not x-ray treatment is indicated. The omission of a biopsy in an apparently inoperable neoplasm might deprive the patient of a possible curative treatment.

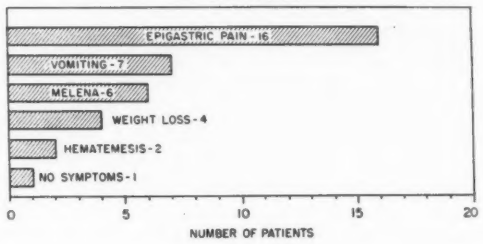
Clinical Manifestations

There are no symptoms specific for gastric lymphosarcoma. Patients present a history which may suggest any type of upper gastrointestinal disorder, such as peptic ulcer of the stomach or of the duodenum, gallbladder disease or hiatal hernia. The only clinical observation which might elevate the index of suspicion is the relative scarcity of symptoms even in the presence of a large tumor. Anemia, cachexia, marked weight loss and digestive symptoms may be strikingly absent. McNeer[3] reported that all of the 5 year survivors among his patients had tumors larger than 8 to 10 cm. and all of these were ulcerated.

In our cases (Fig. 3) the statistical breakdown of symptoms was no different from that of other comparable series. The commonest symptoms were epigastric pain (76%), vomiting (33%), and melena (28%). Weight loss of over 10 pounds was present in only 4 of our patients.

The physical examination is usually not helpful. There is an occasional large mass or signs of peripheral extension of the tumor, such as pleural effusion or ascites.

FIGURE III. SYMPTOMS AND SIGNS IN PRIMARY LYMPHOSARCOMA OF THE STOMACH



Gastroscopy

Gastroscopy, a frequently neglected diagnostic aid, is often helpful in the identification of this entity. The following are a few features which have been said to be highly suggestive of or diagnostic of lymphosarcoma:

1. Granular appearing mucosa with peculiar highlights on dry mucous membrane suggesting "goose pimples" in the stomach lining.[10]
2. Submucosal nodularity with surrounding abnormal looking mucosa.
3. Multiple ulcerations.
4. Giant rugal folds.

The statement by Schindler[11] that "tremendous infiltration with protruding hemorrhages, numerous folds and nodules is almost pathognomonic" should be borne in mind by the gastroscopist.

X-ray Manifestations

Although lymphosarcoma of the stomach can mimic any gastric pathology, the following findings are suggestive of the diagnosis:[3,8,12]

1. Extensive involvement with polypoid tumors.
2. Multiple ulcerations.
3. A localized tumor which is round and smooth.
4. Multiple nodules with apparently normal intervening mucosa.
5. Lesions which cross the pylorus.
6. Extensive appearing lesions through which peristaltic waves still pass.

Treatment

All lymphoid tumors of the stomach are radiosensitive to some degree, the more dif-

ferentiated the cellular type, the more responsive the tumor to x-ray treatment. Surgical excision alone has been proven to give spectacular cures in some cases. Treatment by x-ray alone has been suggested principally by Burnett[13] on the basis that x-ray treatment of localized lymphosarcoma elsewhere has given good results. This author pointed out that most cases treated with x-ray alone have already been surgically explored and found to have an unresectable lesion or have been denied surgery because of far advanced disease. Neither form of treatment produces much benefit in these situations. The entity is so uncommon that no series is large enough to show any real statistical advantages of either form of therapy alone. There is in practically every series an occasional case which shows a rather striking response to irradiation.

Generally, if the patient has residual tumor known to have been left following operation, x-ray therapy is advised by everyone. If it seems that all the tumor has been removed, the opinion varies. Some advocate postoperative x-ray treatment to eradicate any unrecognized residual neoplasm. Others believe that the prognosis would not be greatly altered if the recurrences are treated when they are recognized clinically.

Our series is also too small to show any valid advantages of combined therapy over that of resection or of irradiation alone. Most surgeons at our institutions favor the use of routine postoperative x-ray treatment for the following reasons:

1. The morbidity from the x-ray therapy, though appreciable, is not often permanently incapacitating. Hemorrhage and perforation of hollow viscera have been reported following x-irradiation but are not common with modern technics of fractionated x-ray therapy.

2. The inability of the pathologist and of the surgeon to determine the absolute extent of the disease is common.

3. A diagnosis of recurrence may not be made until the process is too far advanced for effective regional irradiation therapy.

Results of Treatment

The 5 year survival rate for primary lymphosarcoma of the stomach in other series has varied from 10.5 to 52.4%, depending largely on the size of the series.[3,6] Snoddy reviewed 474 cases in the world literature and arrived at the 10.5% figure for 5 year survivors. In our series (Table 2) there were

TABLE 2

SUMMARY OF RESULTS OF TREATMENT PRIMARY LYMPHOSARCOMA OF THE STOMACH

Patient	Age	Sex	Cell Type	Therapy	Length of Follow-up
A. Living without recurrence—12 patients					
E.R.C	57	M	R.C.*	Surgery + X-ray	6 yrs.
I.B.	58	M	R.C.	Surgery + X-ray	5½ yrs.
A.W.	44	M	R.C.	X-ray only	5 yrs.
W.G.T.	55	F	L.C.**	Surgery + X-ray	3½ yrs.
D.C.P.	56	M	L.C.	Surgery only	3½ yrs.†
S.P.	62	M	L.C.	Surgery + X-ray	2 yrs.
M.H.	53	M	R.C.	Surgery + X-ray	1½ yrs.
J.T.F.	58	M	L.C.	X-ray only	1 yr.
S.L.M.	55	F	L.C.	Surgery + X-ray	5 mo.
J.J.H.	50	M	L.C.	X-ray only	3 mo.
R.T.P.	67	M	L.C.	Surgery + X-ray	2 mo.
M.K.M.	32	M	R.C.	Surgery only	1 mo.†
B. Living with recurrence—1 patient					
F.G.R.	64	M	L.C.	Surgery + X-ray	2½ yrs.
C. Dead with recurrence—8 patients					
L.V.D.	69	F	R.C.	Surgery + X-ray	10 yrs.
M.E.T.	43	F	H.D.††	X-ray only	5 yrs.
C.K.	59	M	H.D.	Surgery + X-ray	4 yrs.
T.F.J.	64	M	L.C.	Surgery + X-ray	16 mo.
E.F.R.	68	M	R.C.	Surgery only	7 mo.
F.E.C.	54	M	R.C.	X-ray only	3 mo.
O.M.G.	66	M	R.C.	Surgery only	3 days postop.
R.W.V.	73	M	R.C.	None	Died day of admission

*Reticulum cell sarcoma
**Lymphocytic lymphosarcoma
†Subsequently lost to follow-up
††Hodgkin's disease

TABLE 3

TYPE OF TREATMENT RELATED TO SURVIVAL: PRIMARY LYMPHOSARCOMA OF THE STOMACH

	Patient		
A. Total Gastrectomy			
	L.V.P.		10 yrs.
	E.F.R.		7 mos.
		Mean—	5 yrs., 2 mos.
B. Radical Subtotal Gastrectomy			
	I.B.		5 yrs., 6 mos.
	A.W.		5 yrs.
	M.H.		1 yr., 6 mos.
	R.P.		2 mos.
	O.M.G.		2 das.
		Mean—	2 yrs., 5 mos.
C. Standard Subtotal Gastrectomy			
	E.R.C.		6 yrs.
	C.K.		4 yrs.
	W.G.T.		3 yrs., 6 mos.
	D.C.P.		3 yrs., 6 mos.
	F.R.		2 yrs., 8 mos.
	S.P.		2 yrs.
	T.F.J.		1 yr., 4 mos.
	S.L.M.		5 mos.
		Mean—	2 yrs., 11 mos.
D. X-Ray Only			
	M.E.T.		5 yrs.
	J.T.F.		1 yr.
	F.E.C.		3 mos.
	J.J.H.		3 mos.
		Mean—	1 yr., 11 mos.

5 patients whose course was followed longer than for 5 years and who survived for 5 years. Two of these ultimately succumbed to tumor. Probably, as the length of our follow-up increases, more long-term survivors will result. The value of such a statistic is meaningless in a small group of patients but, perhaps, can serve to emphasize the better relative prognosis compared to carcinoma of the stomach where the 5 year survival rate approximates 5 to 10 per cent.

The type of surgical treatment did not materially affect the ultimate outcome in our limited experience (Table 3).

In this type of tumor the surgeon could feel justifiably less hesitant about cutting across tumor, since the patient will receive other therapy which, in favorable circumstances, might be curative.

Summary

A review of the pathology, symptomatology and diagnostic aspects of this class of neoplasm has been presented.

An analysis of 21 cases has been presented from the combined experiences of the Vanderbilt University Hospital and the Thayer Veterans Administration Hospital, Nashville, Tennessee, from 1948 through 1959.

Conclusions

Lymphosarcoma of the stomach may be indistinguishable from carcinoma of the stomach clinically.

Because of the radiosensitivity of these tumors, the outlook with supposedly far advanced growths is by no means hopeless if the patient is offered supplementary x-ray therapy.

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Clinical Appraisal of a New Urographic Medium: A Comparison with Other Commonly Used Media

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The pharmaceutical firms continue in their attempt to produce new agents which may be more efficacious or provoke fewer side effects. The author provides her experience with such a new contrast medium.

INTRAVENOUS PYELOGRAPHY has become routine procedure in the modern diagnosis of conditions related to the urinary tract. The principle factor in the widespread acceptance of this method has been the availability of new contrast agents that not only visualize the urinary tract satisfactorily but are also safe for use by the intravenous route. Prominent among the media which have found widespread use within the past few years are methylglucamine (Renografin 60%), diatrizoate sodium (Hypaque 50%), and diprotrizoate sodium (Miokon 50%).[1-7] Recently a new contrast agent, identified as Renovist, was introduced for clinical trial. This is an aqueous solution of diatrizoate methylglucamine and sodium, which contains approximately 37% (9.3 Gm. per 25 cc.) of firmly bound iodine. Renovist is a modification of the Renografin formulation with a resulting viscosity lower than that of the latter which facilitates its administration.

The present report concerns the results of a clinical trial of diatrizoate methylglucamine and sodium at this hospital in the routine examinations of patients referred to the Department of Radiology for intravenous pyelography. Since similar studies had been conducted previously with Renografin 60%, Hypaque 50% and Miokon 50%, it was possible to compare the urograms obtained with Renovist with those in the earlier series of patients examined with the other media.

Method

One hundred patients were examined with the new medium. Forty-seven were male and 53 were female, their ages ranging from 16 to 70 years. All had been referred to the Department of Radiology for intravenous pyelography for various conditions. There was no attempt to select patients for the series except to limit the study to patients 13 years of age and older, and to exclude those with a history of bronchial asthma or of anaphylactoid reaction during a previous pyelographic examination. Allergy reported by patients to drugs or sea foods as well as sensitivity reactions in preliminary tests with other media were recorded. Prior to examination allergic patients received an intravenous injection of antihistamine, but a preliminary sensitivity test with diatrizoate methylglucamine and sodium (Renovist) was not performed in any case because of the admittedly poor correlation generally observed between such tests and subsequent reactions during examination.[8]

Except in cases of emergency, where preparation of the patient was not feasible, each patient was given 2 fluid ounces of castor oil on the evening before pyelography and received only toast and coffee (one cup) or else nothing for breakfast on the morning of the examination. At examination, Renovist was injected into a large vein, usually in the antecubital region, through a 21 gauge needle. During the initial phase of the study 20 cc., and later 26 cc. of the medium were administered. The time of injection varied from 1 to 3 minutes. Films were exposed routinely at 8 and 15 minutes after the injection was completed, additional films being taken only as indicated after viewing the wet films. No abdominal compression

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TABLE 1

RENOVIST

	GRADE I Excellent Quality Pyelograms	*GRADE II Good Quality Pyelograms*	*GRADE III Fair Quality Pyelograms*	*GRADE IV Poor Quality Pyelograms*	*TOTAL GRADES I and II*	*TOTAL GRADES III and IV*
Total cases	27	49	22	2	76	24
Male	5	22	18	2	27	20
Female	22	27	4	0	49	4
Age range (years)	15-62	17-84	17-70	16-68	15-84	16-70
Total reactions	10	12	7	1	22	8
Male	0	6	5	1	6	6
Female	10	6	2	0	16	2
Nausea	5	6	5	1	11	6
Vomiting	0	1	0	0	1	0
Sensation of heat	6	6	1	1	12	2
Flushing	0	1	1	0	1	1
Tingling	0	1	0	0	1	0
"Choking"	0	0	0	1	0	1

was used. After injection of the medium any obvious reactions of the patient, such as vomiting and flushing seen by the technician and any unusual sign or symptom observed by the radiologist, were recorded. Patients with previous allergies were questioned by the radiologist about subjective symptoms in such a manner as to avoid suggestion.

After the examination of all of the patients in the series had been completed, five consulting radiologists participated independently in a comparative evaluation of the pyelograms obtained with Renovist in the present series with those in earlier series of patients similarly examined with Renografin 60%, Hypaque 50% or Miokon 50% (Table 1). A total of 400 films was reviewed by each examiner, 100 of the 400 films having been made with each of the four contrast agents respectively. Each film was evaluated individually by the several examiners who, at the time, did not know which contrast agent had been administered, and a rating from Grade I to IV was assigned to each film with Grade I representing "excellent" quality, Grade II "good," Grade III "fair" and Grade IV "poor" quality. Though the films were judged on the basis of the density exhibited as well as the degree and extent of opacification of the urinary tract attained, such factors as obscuring shadows and variations in technic were also considered. The ratings for each study were then compiled and averaged; the results are given in table 2. It is of interest that the grades assigned to each film by the several examiners rarely differed more than one point.

Results

Diagnostic films were obtained in 76 of the 100 patients examined with Renovist. In

TABLE 2

RESULTS IN 400 CASES EXAMINED WITH THE FOUR MEDIA UNDER STUDY
(100 Cases Examined With Each Medium)

Contrast Medium	*Quality of Pyelograms**				*Number of Cases with Diagnostic Films*
	Grade I (Excellent)	*Grade II (Good)*	*Grade III (Fair)*	*Grade IV (Poor)*	
Renovist	27	49	22	2	76
Renografin 60%	25	43	27	5	68
Hypaque 50%	35	53	11	1	88
Miokon 50%	36	48	13	3	84

*Grade I—Pyelograms approaching retrograde quality with visualization of the entire urinary tract including all of the upper collecting system.

Grade II—Pyelograms showing less density with calyceal filling not as satisfactory as in Grade I but the films were diagnostic and quite acceptable.

Grade III—Pyelograms with poor filling of portions of the collecting system or low density visualization.

Grade IV—Pyelograms showing only faint visualization of portions of the upper collecting systems indicating only that there was kidney function.

27 of the 76 cases, the films were classified as "excellent," that is, the quality of contrast approached that seen in retrograde films with visualization of the entire urinary tract including all of the upper collecting system. The pyelograms in 49 of the 76 cases were considered to be "good" because they were quite acceptable and diagnostic in quality, although they showed less density and less calyceal filling with the medium than those graded as "excellent." The films in the rest of the series were classified as "fair" in 22 cases and "poor" in 2 cases. "Fair" pyelograms showed poor filling of portions of the collecting system with low density of contrast, while in "poor" examinations there was only faint opacification of portions of the upper collecting system which indicated only that the kidney was functioning. Neither *fair* nor *poor* pyelograms were judged to be satisfactory for diagnosis. One curious finding was the high percentage of *fair* and *poor* examinations among the male patients. Twenty of the 22 *fair* studies and both of the *poor* studies were obtained in male patients examined with Renovist. Why this should be so is not clear from the findings. Since these males ranged in age from 16 to 70 years, extreme old age with its concomitant ailments, such as prostatic hypertrophy, apparently was not a factor. What other factors may have contributed to this pecularity has not yet been investigated.

Renovist proved to be easy to use because of its low viscosity, and the freedom of the medium from crystallization in the syringe. The patients in whom extravasation occurred complained only of moderate pain at the site of injection and this was of short duration. No severe reactions of any type were noted. While reactions were experienced by 30 of the 100 patients examined, they were mild and caused only minimal discomfort. These reactions are given in the following tabulation:

Side Reaction	*Number of Patients**
None	70
Nausea	17
Vomiting	1
Sensation of heat	14
Flushing	2
"Choking" sensation	1

*More than one reaction occurred in several patients.

Discussion

There is considerable information in the literature concerning the diagnostic quality of films made with various contrast media in intravenous pyelography. In recent papers[1-7] the consensus seems to be that the best films are obtained with the three media: Renografin 60% (or Renografin 76%), Miokon 50% and Hypaque 50%. From table 1 it is apparent that in our experience Renovist proved to be superior to Renografin 60% in the number of diagnostic films obtained. The greatest number of high quality films was obtained with Hypaque; Miokon rated a close second and Renografin 60% provided the least number of diagnostic films. Our experience is in general agreement with that reported by Bohne and Drew,[3] though Utz and Thompson[2] found the reverse to be true, their best pyelograms being obtained with Renografin 60% (Table 3). It should be noted that the comparative evaluation in the present study is concerned solely with the quality of films obtained with the respective media, without consideration of the incidence of the reactions encountered. In the literature the rate of reactions reported with the several media has been consistently favorable to Renografin 60%. Side reactions have been recorded in this department since March 1958, with each of the four contrast media studied. During this time, no major reactions have been noted with Renografin, Renovist, or Hypaque. Two cases of anaphylactic shock and one severe urticarial reaction have occurred after Miokon was administered. The number and kind of reactions that were observed with the several media will be part of a future report of the results obtained with all contrast agents studied by this department over a period of two years, and further details will not be given in the present report.

Summary and Conclusions

Diatrizoate methylglucamine and sodium, a new contrast agent for intravenous pyelography, has been evaluated in intravenous pyelographic studies in 100 cases. Diagnostic films were obtained in 76 cases, with films in 27 cases approaching retrograde quality, both as to the density of contrast and the extent of visualization shown. The films in 49 of these cases were quite acceptable and diagnostic in quality although they showed

TABLE 3

COMPARATIVE PYELOGRAM QUALITY BY PER CENT OF CASES

CONTRAST MEDIUM

INVESTIGATOR	*RENOVIST*				*RENOGRAFIN 60%*				*HYPAQUE 50%*				*MIOKON 30%*			
	Excellent	*Good*	*Fair*	*Poor*	*Excellent*	*Good*	*Fair*	*Poor*	*Excellent*	*Good*	*Fair*	*Poor*	*Excellent*	*Good*	*Fair*	*Poor*
NORTH																
100 cases each	27	49	22	2	25	43	27	5	35	53	11	1	36	48	15	3
BOHNE and DREW[3]						(RENOGRAFIN 76%)										
200 cases each					13.5	45.5	31.5	9.5	21	52.5	18.5	8	20.5	56.5	16	7
SPEICHER[5]																
800 cases									13.5	71.3	14	1.2				
MAYO CLINIC[2]																
200 cases each						82	14	4		73	20	7		65	28	7
CULP, EPPS and EDWARDS[1]						(RENOGRAFIN 76%)										
135 cases Hypaque																
235 cases Renografin																
155 cases Miokon						82.4	13.4	4.2		84.6	8.1	7.2		89	6.8	4.1
BARRY[7]																
166 cases													71.7	15.7	12.6	0
NESBIT and MORROW[4]																
1,665 cases Hypaque																
1,365 cases Miokon									5.9	78.9	11.7	1.8*	7.5	74.3	14.1	2.5*

*Remainder of cases non-visualized.

less density and less calyceal filling with the medium. The films in the remaining 24 cases in the series were not diagnostic in quality.

The medium proved to be easy to use because of its low viscosity, without ready crystallization of the medium in the syringe. The patients in whom extravasation occurred complained only of moderate pain at the site of injection. No severe reactions of any type were noted. Reactions were observed in 30 of the patients but they were mild and caused only minimal discomfort. These reactions included nausea, vomiting, sensation of heat, flushing and a "choking" sensation.

The pyelograms obtained with the new substance have been compared with those in previous series examined similarly with the more commonly used contrast media. It proved to be superior to methylglucamine in the yield of high quality films, but the two media were comparable in the ease with which they may be injected and in the low incidence of side reactions encountered in their use. In our experience, a higher yield of pyelograms of superior quality has been obtained with diatrizoate sodium and diprotrizoate sodium than with other contrast media.

Acknowledgments

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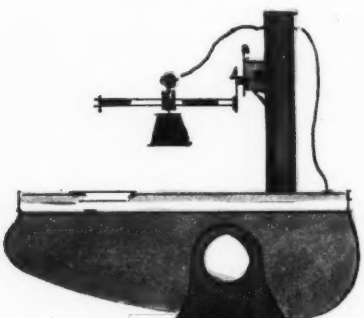

Spontaneous Vesicointestinal Fistula*

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The authors present their series of cases of this unusual condition, describing the clinical condition, the diagnostic studies indicated and illustrate methods of treatment.

VESICOINTESTINAL FISTULAS were first described in the second century. In 1888, Harrison Cripps[1] presented a description of this condition, and his original article has been referred to in the literature many times since.

Vesicointestinal fistulas are not a frequent finding. From 1951 to 1960, 74,732 patients were admitted to Kansas City General Hospital, and we were unable to find a single instance of the lesion. Barnes and Hill[2] reported one case in 600 patients admitted with urologic diseases.

The causes for fistula formation in order of frequency are as follows: (1) inflammatory, (2) neoplastic, (3) traumatic, and (4) congenital. Congenital lesions are rare and associated with imperforate anus. We are not concerned with this classification in this paper. Fistulas attributed to trauma are the result of gunshot wounds, surgery, or foreign bodies which have been ingested or migrated from other areas of the body. Foreign bodies described in the literature are pins, needles, chicken bones, and even a dental plate.[3] Occasionally these fistulas will heal spontaneously without surgical intervention. Fistulas due to trauma vary from 4 to 18.7% in various series.[4] Neoplasms causing vesicointestinal fistulas are most likely to be primary growths of the lower intestinal tract, or from the urinary bladder. Carcinoma of the rectosigmoid ranks first in frequency, followed by those found in the rectum and then the bladder.[5] The operative results where neoplasms are the basis of disease are not nearly so impressive as those due to inflammatory diseases. Fistulas resulting from malignancies are usually a direct communication between the intestinal tract and the urinary bladder.

The inflammatory classification constitutes the largest group of causes of vesicointestinal fistulas. Most of these are due to diverticulitis of the colon, but other conditions causing fistula formation are regional ileitis (Crohn's disease), appendiceal abscess, Meckel's diverticulum, tuberculous enterocolitis[6] and cystitis, vesical calculi, and actinomycosis.[7] It is interesting to note that at one time such conditions as syphilis, typhoid, gonorrhea, salpingitis, and amebiasis were recorded as etiologic factors.

In instances in which diverticulitis is the offender, the age is usually between 40 and 80 years, although both older and younger patients have been found. Mayo and Blunt,[8] reviewed 202 cases of proven diverticulitis of the sigmoid colon and found fistulas in 46 or 22.8 per cent. Reid and Workman[9] reviewed 266 cases of diverticulitis requiring hospitalization and found the incidence of vesicointestinal fistula in 1.5 per cent.

Fistulas are more common in men by an approximate ratio of three to one. This is explained by the fact that in women, the uterus and adnexa act as an anatomic barrier between the bowel and the urinary bladder. In cases where hysterectomy has been performed, fistula is more likely to occur. Sutton,[10] in 1921, reported that vesicointestinal fistula was more common in women and listed the most probable etiologic factor as salpingitis. This is not true today.

The symptoms follow the course or stage of the diverticulitis. In the early stages, fecal material and bacteria fill the diverticulum and an acute inflammation develops. A peridiverticulitis and abscess then form and later rupture into the bladder, thus forming a fistulous tract from the bowel to abscess, and from the abscess to the urinary bladder. This may cause considerable confusion to the diagnostician because this tract may remain open constantly or close intermittently, causing the

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symptoms to subside. Recognition of an incipient fistula is important, and adequate surgical and medical treatment during this phase of the disease may prevent the fistula from occurring.[11] The symptoms of prefistula formation, such as dysuria, urgency, tenesmus, frequency, a small bladder capacity, and occasionally hematuria, may be present weeks before the actual fistula develops. When there is actually a rupture into the bladder, the patient may develop chills and fever in addition to the bladder symptoms.[12] During the prefistula stage the patient may complain of a dull, vague lower abdominal cramping, which seems to improve after the tract is established. Once this has occurred the symptoms become predominantly urinary.

There are three findings which are of paramount importance: (1) pneumaturia, (2) fecaluria, and (3) passage of urine from the rectum. Pneumaturia is considered diagnostic of vesicointestinal fistula in patients with diverticulitis until proven otherwise. Other conditions which will also cause passage of air from the urethra are yeast infections of the urinary tract, cystitis emphysematosa, and catheterization or instrumentation. It is the responsibility of the examining physician to inquire specifically of the patient in regard to the passage of air from the urethra, since most patients do not volunteer this information. A useful diagnostic aid employed by us has been to collect the urine by "under water technic," with fluid displacement by air in a water filled inverted test tube,—thus collecting gas from the bladder.

The passage of feces in the urine depends upon the size of the fistula. This is pathognomonic when found but is not always present, or it may be intermittent. Many fistulas are too small to allow fecal particles to pass, but will allow air to pass from the intestine into the bladder.[5] In such cases it may be possible to detect a tooth paste-like extrusion of pus from the fistulous opening into the urinary bladder thereby confirming the diagnosis.

The passage of urine from the bowel is less common than air from the bladder or feces in the urine. This may be explained by the increased pressure on the intestinal side and due to the fact that most fistulas are small and tortuous.

Diagnostic Aids

It is agreed by all authors that cystoscopy is the most valuable single aid in making the diagnosis of vesicointestinal fistula. The typical findings are a circumscribed area of bullous edema and inflammation usually located on the left side of the bladder, if the disease is due to a diverticulitis, or on the right side of the bladder if it is due to ileal, cecal, or appendiceal disease. It is possible for the opening of the fistula to be located in such an area in the bladder that visualization with the right angle telescope is difficult or impossible, and the lesion can only then be seen with the foroblique optical system. When the lesion is suspected and not found at the original cystoscopic examination, repeated cystoscopies are in order. In chronic cases there is often very little reaction around the opening into the bladder, and it is only by repeated and prolonged observation that air bubbles or particles of pus can be observed coming from the opening. Once the opening is located, a small ureteral catheter may be introduced into the sinus tract far enough to establish communication between the bladder and the bowel by the injection of opaque material.

Cystograms have been found quite valuable in demonstrating extrinsic vesical pressure,[13] but they are of little value in revealing a communication between the bladder and bowel.

Methylene blue or indigo carmine have been injected into both bladder and rectum with subsequent visualization of it in the adjacent viscus. Hydrogen peroxide has been mixed with these agents and given as an enema followed by cystoscopic examination.

Repeated feedings of charcoal or mineral oil enemas and recovery of the substances in the urine have also been suggested as possible diagnostic aids.

Proctoscopic examination is of value in differentiating between carcinoma and diverticulitis but of little value in demonstrating the fistulous opening. The same is true of barium studies of the bowel.

Biopsy of the bladder lesion may help in ruling out a neoplasm.

Microscopic examination of the urine may be helpful in revealing pus cells and undigested vegetable or starch particles. However, it must be kept in mind that it is com-

mon for the pyuria to disappear with antibiotic therapy only to recur again. In other cases the pyuria is completely refractory to treatment.

Treatment

Each patient must be treated as an individual and management may be either medical or surgical. The patients whose physical condition will not permit operation, or who refuse a surgical procedure must be treated with antibiotics and symptomatically. A few of these patients may live many years, as was pointed out by Duff[14] who recorded one patient who survived 48 years.

Conservative types of surgery have frequently led to recurrence of the fistula.[5] If the process is acute and there is a large inflammatory mass, it may be necessary to do a colostomy as a preliminary procedure. It is generally agreed that a complete resection of the fistula with a segment of diseased colon and bladder gives the best result. It is preferable to do this operation as a one stage procedure without preliminary colostomy when feasible. However, many times this decision cannot be made until the patient is operated upon. A one stage procedure is becoming increasingly more popular because of better methods of preparing the bowel and regulation of fluid balance.[3,8,15-18] There is considerable saving in hospitalization and morbidity when a one stage operation can be accomplished as compared to the multiple stage operations as sometimes performed.

Case 1. A 69 year old white man was first seen on Aug. 4, 1948, with nocturia once every hour, relieved by sitting up. He complained of severe chills for 2 weeks and had passed small amounts of blood on two occasions. During this time he had had three to four bowel movements a day, but denied diarrhea or tarry stools. For 10 days he noted gas passing from the urethra. Seven years previously a transurethral resection of the prostate had been performed; no difficulty had been encountered in passing his urine since the operation. An occasional severe abdominal pain had been experienced radiating to the right inguinal area.

Physical examination revealed a well-developed, well-nourished man, who did not appear ill. B.P. was 164/100, P. 92 and T. 99.2°F. A systolic murmur was heard in the aortic area, transmitted to the neck.

Laboratory studies. Hgb. was 10.4 Gm., RBC. 4,200,000, WBC. 27,650. The blood sugar was 100 mg., phosphorous 32 mg., BUN. 28 mg., and Co_2 combining power was 35 vol. per 100 ml. Urinalysis showed a specific gravity 1.020, pH 5.5, albumin 2+, sugar 0, and microscopically the field was loaded with pus cells. Urine culture grew out *Esch. coli*.

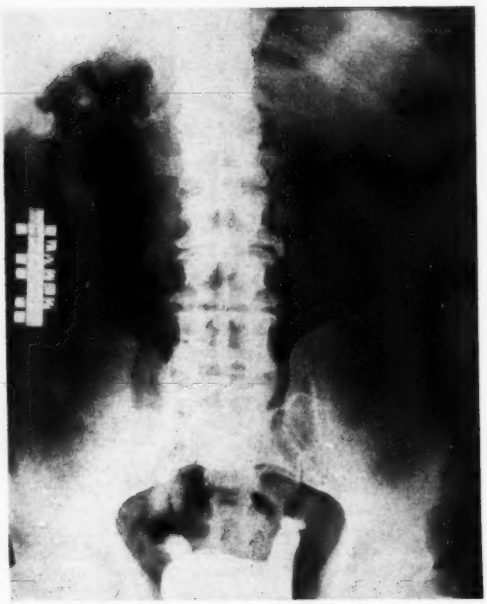
Urologic consultation on August 13: The patient had 75 ml. of residual urine. Cystoscopic examination revealed a minimal amount of prostatic obstruction. As the cystoscope entered the bladder, a large amount of gas was released. Both ureteral orifices were enlarged approximately four times their normal size. It was impossible to detect the fistula with a right angled telescope, and it was only after the #24 McCarthy panendoscope was introduced that a small pin-point depression was located on the posterior surface of the dome of the bladder superior to the left ureteral orifice. Even knowing the location of the fistula, we were still unable to visualize the opening satisfactorily with the Brown-Burger cystoscope. With repeated filling and emptying of the urinary bladder, a grayish-white, stringy tooth paste-like material was detected coming from the tiny opening. A plain film of the abdomen demonstrated an outline of the bladder, ureters, and kidney pelves with air (Fig. 1). A cystogram confirmed the reflux into the upper urinary tract (Fig. 2). An enema of indigo carmine and saline was given followed by cystoscopic examination, which proved to be of no help in the diagnosis. A barium enema confirmed the presence of many diverticula in the sigmoid and descending colon.

Following medical treatment for the anemia and azotemia, a transverse colostomy was performed on September 13. On November 19, the adherent area between the sigmoid colon and the bladder was separated. The colon showed a diverticulum extending through an epiploic appendage and communicating with the bladder by means of a sinus tract. The open portion of the diverticulum was closed with chromic

FIG. 1

Plain film showing a complete outline of the bladder, ureters, and kidney pelves with gas from the intestinal tract by way of a vesicointestinal fistula.

FIG. 2



Cystogram showing reflux up both ureters.

catgut and the end was sutured back upon the colon to help close this defect. Complications prevented the successful closing of the colostomy, and after repeated attempts at closure, a fecal fistula to the skin remained.

The BUN. remained elevated and the pyuria persisted. By Nov. 20, 1950, there apparently had been a recurrence of the vesicointestinal fistula, since the patient said he occasionally passed a small amount of gas at the end of urination.

On two occasions in 1951, the patient was hospitalized for uremia, hypertension, and cardiac decompensation. Each time, he recovered sufficiently to leave the hospital. We learned later that he died in October 1952.

Case 2. A 73 year old white woman was first seen in the hospital on Aug. 14, 1954, complaining of fever, dysuria, hematuria, frequency, and passing small, brownish flakes in the urine. After cystoscopy we obtained a history of pneumaturia. At intervals over a 4 month period, she had vague pain in the lower abdomen and had been treated with antibiotics with periods of relief. Additional complaints were cough, dyspnea, edema of the ankles, occasional headache, and constipation. There was a history of two pregnancies without complications. A hysterectomy had been performed in 1924.

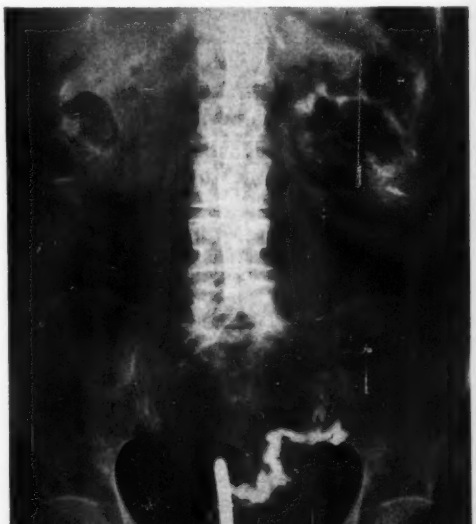
Physical examination. P. was 76. B.P. 190/100, and T. 101.4°F. She was a well-developed and nourished woman who did not appear uncomfortable. The examination was essentially negative except for a slight enlargement of the heart to the left and tenderness in the suprapubic area.

Laboratory studies. Hgb. was 65%, RBC 3,000,000, and WBC. 6,600, with neutrophils 59%, lymphocytes 37%, and monocytes 4%. Urinalysis showed a specific gravity of 1.010, pH 7, albumin 1+, sugar 0, and a sediment loaded with WBC. Upon numerous examinations, the urine was always loaded with pus cells. The N.P.N. was 25 mg., chlorides (whole blood) 430 mg., and the CO_2 combining power 64 vol. per cent. Total serum proteins were 6.2 Gm. with an albumin of 4.0, and globulin 2.2 Gm. per 100 ml. Potassium was 4.57 mEq./L.

At cystoscopy there was an area, the size of a silver dollar, on the left posterior surface of the dome of the bladder which showed marked injection and bullous edema. In the center of this was a grayish area in which a small, vermiform, grayish white, semisolid material was seen extruding through a small opening on one occasion. A #5 ureteral catheter would pass only 3 cm. Skiodan was injected through the ureteral catheter, demonstrating a sinus tract communicating between the urinary bladder and sigmoid colon (Fig. 3). Lateral films were taken to better establish the position of this sinus tract. The upper urinary tract was normal. Cystograms in the AP and oblique view were of no help in the diagnosis. A barium enema revealed a short cecum and diverticulosis of the descending and sigmoid colon.

After preparation of the bowel, the patient was taken to surgery on September 3. A #5 ureteral catheter was inserted up the left ureter prior to the abdominal exploration. The patient was explored through a midline suprapubic incision, and the sigmoid found firmly attached to the bladder in the region of the fundus, superior to the left ureteral orifice. When the bladder was opened, a demarcated,

FIG. 3



Demonstration of vesicointestinal fistula by injection of a radiopaque substance through a ureteral catheter threaded into the fistula a short distance at cystoscopy.

hemorrhagic, round area was noted. The peritoneum was then separated from the bladder, and the diseased area of the bladder removed. The fistulous tract was very short and appeared to be chronic in nature. This fistulous tract was resected from the sigmoid colon, and the colon closed with a purse string suture, reinforced by interrupted gastrointestinal sutures. The bladder was closed with chromic #0 catgut suture after leaving a Foley catheter in for suprapubic drainage. The postoperative course was uncomplicated.

The pathologist was unable to demonstrate the communicating fistulous tract, and the specimen was reported as inflammatory bladder wall. She was discharged from the hospital on Sept. 22, 1954, asymptomatic and voiding normally.

Case 3. A 54 year old white man was admitted to the hospital on May 28, 1955, for recurrent urinary infections and recurrent epididymitis. The urinary infections were manifested by frequency every one-half to two hours, dysuria, and upon two occasions, hematuria. This was the third attack of epididymitis, which was described as occurring with the urinary infections. During the exacerbations he had been treated with antibiotics which gave him relief for a short period.

Four years prior to this, an abscess had been drained in the suprapubic area. A cystoscopy revealed mild trabeculations and cellule formation of the bladder. A proteus organism was cultured from the urinary tract, with slight sensitivity to chloramphenicol and streptomycin. The kidney pelves and ureters were essentially normal. A ligation of the vas was performed to prevent a recurrent epididymitis, and the patient was released from the hospital. Two months later he returned, and close questioning revealed the possibility of passing air from the urethra. We were unable to find the fistulous opening on subsequent cystoscopy.

This patient did not return until May 21, 1957, when he admitted that pneumaturia had now become a common occurrence. At cystoscopy, a 2 cm. area, superior and medial to the left ureteral orifice, was found in which the mucosa was edematous and inflamed though it appeared unbelievably normal beyond this circumscribed area. In the center was a small, grayish spot which was believed to be the fistulous opening. The patient was admitted to the hospital on June 6. The physical examination was essentially negative. On the day following admission, and after considerable difficulty, a #4 pig-tail ureteral catheter was inserted far enough into the fistulous tract at cystoscopy to demonstrate a communication between the bladder and the sigmoid colon (Fig. 4).

Laboratory studies. The PCV. was 39%, Hgb. 14.4 Gm., and the WBC. 8,500, with filamented cells 65%, lymphocytes 33%, eosinophils 1%, and monocytes 1 per cent. Urinalysis showed a pH of 5, specific gravity 1.015, no albumin or sugar, numerous WBC. and pus clumps on microscopic examination. N.P.N. was 29 mg. per 100 ml.

Sigmoidoscopy was negative. X-ray film of the chest, I.V.P. and cystograms were negative. Barium enema revealed hyperirritability of the sigmoid colon in the region of the fistula. The bowel was prepared

FIG. 4

The fistulous tract demonstrated by means of a ureteral catheter inserted far enough through the orifice so injected opaque material shows the communication between bladder and sigmoid colon.

for operation, and on June 12, the fistulous tract was removed with a segment of diseased bladder and 17 cm. of the sigmoid colon, containing multiple diverticula. The bladder was closed with suprapubic drainage, and the sigmoid colon closed by end-to-end anastomosis without proximal colostomy.

The operative course was uneventful. The wound was healed, and the patient was voiding normally several days before he was dismissed from the hospital, July 3.

The pathologist reported that he was able to trace the fistula only for a short distance from each end due to the tortuosity of the tract. The tract was lined by a richly cellular granulomatous tissue. In one area of the diseased bladder mucosa, a pseudoglandular transformation of the epithelium was noted.

The last contact with the patient was on Sept. 17, 1960, when he informed us that he was in perfect health. The urine had remained negative.

Case 4. A 57 year old man was first seen on July 8, 1958, with the complaint of vague, suprapubic discomfort and pain in the low back. He had had symptoms of urinary obstruction such as stopping in the middle of urination, dribbling, frequency, dysuria, and pyuria for 6 months. His family physician had treated him with antibiotics, and his symptoms would come and go. A past history revealed that he had been in good health all his life until the present illness. Urinalysis revealed only a few scattered pus cells per high power field, but he had just completed a course of antibiotic therapy. Cystoscopy showed mild trabeculation and an early prostatism, although the residual urine was only 5 ml. During the next 4 months, he had several attacks of urinary infection which responded well to antibiotics.

On November 18, the patient returned stating that

he thought he had passed air at the termination of urination. He was advised to enter the hospital but was reluctant to do so. On April 4, 1959, he developed an epididymitis on the right side, and at this time we were able to confirm the pneumaturia by watching the patient void and collecting the urine under water. After a period of hematuria, he consented to be hospitalized on April 30, 1959.

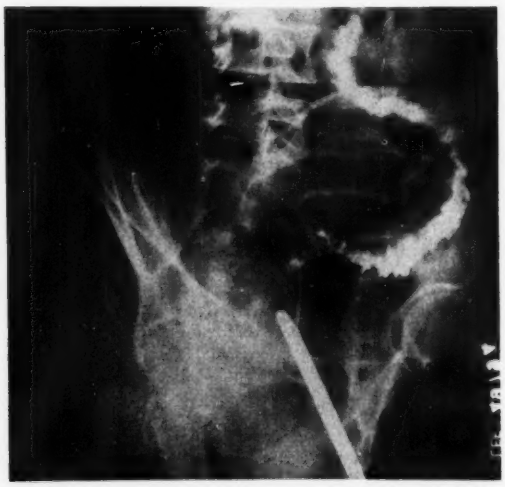
Physical examination revealed a well-developed, well-nourished man. B.P. was 110/70. The examination was negative except for tenderness on deep palpation in the lower left quadrant and suprapubic area. The right epididymis was tender and enlarged.

Laboratory studies. PCV. was 44%, Hgb. 14.8 Gm. WBC. 9,800, with filamented cells 67%, nonfilamented cells 31%, eosinophils 2 per cent. Urinalysis showed a specific gravity of 1.024, was negative for albumin and sugar, and on microscopic study showed 15 to 20 WBC. per h.p.f. Blood sugar was 97 mg. and N.P.N. 33 mg. Serum albumin 5 Gm. and globulin 1.7 Gm. per 100 ml. Serum potassium was 4.4 and chloride 97 mEq./L.

Cystoscopy revealed a small opening in the lower portion of the fundus on the left side, and after prolonged observation, a small, worm-like extrusion of a grayish-white material was noted for a second to come from this orifice. There was only a slight redness of the bladder mucosa adjacent to this opening, and the rest of the bladder mucosa was essentially normal. A #4 ureteral catheter was inserted far enough up the tract for injection of Skiodan, demonstrating a fistula between the urinary bladder and sigmoid colon (Fig. 5).

Chest x-ray film revealed an old, thickened pleura in the left costophrenic angle. Barium enema failed to demonstrate the fistulous tract, but revealed marked diverticulosis of the sigmoid colon. A lateral radiograph showed several of these diverticula in close relationship to the dome of the bladder. Sigmoidoscopy was negative to 25 cm.

FIG. 5



Oblique view illustrating the fistula from urinary bladder to abscess and abscess to sigmoid colon by means of a ureteral catheter inserted into fistulous opening and injection of opaque material.

On May 5, after preliminary preparation of the bowel, the patient was operated on through a midline incision extending from the symphisis pubis to approximately one inch above the umbilicus. As much of the peritoneum as possible was detached from the bladder wall, and a small, firmly adherent area incised. The fistulous tract could easily be demonstrated between the sigmoid colon and the bladder. A segment of bladder was removed with the fistula, and the bladder closed with a continuous #1 chromic catgut suture, and a suprapubic Foley left in for drainage. A segment of sigmoid colon approximately 15 cm. in length was removed, which contained multiple diverticula. An open end-to-end anastomosis was performed in the usual manner and the abdomen closed without colostomy. The perivesical space was drained with a Penrose drain.

The pathologist was able to demonstrate an opening to the sinus tract at each end. The opening into the diverticulum of the sigmoid colon was 1 cm. in diameter. The histopathology revealed the bladder wall to be quite thickened, containing lymphocytic and a polymorphonuclear infiltration with edematous zones and granulation tissue. The pathologic diagnosis was segments of hypertrophied urinary bladder containing a prominent acute and chronic fistulous tract. Extensive perivesical chronic and acute inflammatory reaction was present and a segment of colon with multiple false diverticula.

The patient's postoperative course was uneventful, and he was having no difficulty voiding when dismissed from the hospital on May 26, 1959. Since then he has had a right inguinal herniorraphy and transurethral resection of the prostate. The urine remains sterile and he is asymptomatic.

Case 5. A 70 year old white woman, Christian Scientist, was first seen Sept. 4, 1956, for urologic consultation. She had been hospitalized for persistent pyuria, which failed to respond to various antibiotics. Five weeks prior to admission she had noticed urgency, frequency, mild hematuria, and had developed nocturia. The urinary tract had been normal prior to the onset of the present symptoms. She also admitted having periods of diarrhea, pain in the left lower quadrant, and a weight loss of 13 pounds over the past year.

The examination revealed a normal T., P. and B.P. of 152/78. The examination was essentially normal.

Laboratory studies. Urinalysis showed a specific gravity of 1.015, acid reaction, albumin 1+, negative for sugar, and microscopically many WBC. and RBC., and clumps of pus. The urine culture showed alpha streptococcus aerobacteraerogenes, and *Esch. coli.* These organisms were resistant to all antibiotics except for slight sensitivity to nitrofurantoin. N.P.N. was 35 mg. per 100 ml.

A pyelogram revealed a normal upper urinary tract. On cystoscopy, there was a very severe cystitis with much exudate obliterating the landmarks. A sinus tract was not located.

She was admitted to the hospital on Dec. 13, 1956, after passing discolored urine with brownish particles in it. Diarrhea was also present, and rectal examina-

tion revealed a mass on the right side of the rectum. A biopsy of this lesion was reported as papillary adenocarcinoma of the rectum. On subsequent cystoscopy a red, sessile, edematous tumor was identified on the posterior wall of the bladder, located slightly to the left of the midline. A biopsy was reported as adenocarcinoma of the bladder, which we interpreted as originating in the bowel.

Due to the patient's religion, we were unable to convince her of the necessity of surgery until April 10, 1957, when a combined abdominal perineal resection and partial cystectomy were performed. (The pathologist was able to demonstrate an opening between the ulcerated area of the bladder wall and the rectum.) Her postoperative course was uncomplicated except for a brief spell of hypotension 24 hours postoperatively.

She was last reached by telephone on Oct. 7, 1960, because she would not return for a postoperative examination. She stated that she was enjoying good health.

Case 6. A 74 year old white man was first seen on May 17, 1956, complaining of frequency of urination every one to one and a half hours, and a previous history of retention of urine. He had been hospitalized on April 12, 1956, for bleeding due to diverticulitis which was confirmed by a barium enema. Carcinoma had been ruled out. An upper G.I. series showed a healed peptic ulcer in the duodenum.

On *examination,* the patient was a well-developed man who appeared pale and somewhat uncomfortable. B.P. was 150/80. The left knee was ankylosed slightly in flexion due to previous surgical treatment many years before. Laboratory examinations revealed only a mild anemia.

The patient was treated with antibiotics with good response, only to have the attacks of cystitis recur. He was hospitalized on Jan. 1, 1957, and the urinary tract surveyed. The upper tract was essentially normal. An obstructing median bar and two lateral lobes were resected.

On March 23, 1957, the patient returned, complaining of recurrent pyuria, frequency, and pneumaturia.

On cystoscopy the bladder was found to have many trabeculations, cellules, and diverticula. In one of these diverticula it was noted there was an area of inflammation with grayish-white, floculent debris. We believed a communicating sinus tract between the sigmoid colon and urinary bladder was present, although we were unable to demonstrate it. He was treated with antibiotics which kept him asymptomatic.

On April 7, 1958, he passed black specks in his urine (fecal material) and the pneumaturia became more frequent. Due to his general debility we elected not to attempt surgical correction of the fistula. It has been necessary to keep him on repeated and prolonged courses of antibiotic therapy for control of the urinary infection. For 5 months he has had no bladder symptoms, pneumaturia, or fecal particles in the urine, although the urine remains loaded with pus cells.

Case 7. An 81 year old white woman was first seen Feb. 4, 1956. For 5 months she had had frequency, dysuria, hematuria, and persistent pyuria. She had episodes of diarrhea 3 months before, which improved after 3 or 4 days, only to develop symptoms of cystitis. For the past 10 days she had noted pneumaturia. She was admitted to the hospital on February 11. The physical examination was negative.

Laboratory studies. The Hgb. was 84%, RBC. 4,360,000, and WBC. 5,700. Urinalysis showed a specific gravity of 1.008, no albumin or sugar; microscopic study showed it loaded with WBC. and RBC. Urine culture showed *str. faecalis* and *P. vulgaris,* which were completely resistant to all antibiotics. Blood sugar was 90 mg., and N.P.N. 41 mg. per 100 ml.

I.V.P. revealed a normal upper urinary tract. Proctoscopic examination contributed no additional information. Barium enema revealed diverticulosis of the colon with many false diverticula in the sigmoid, and a single large accumulation of barium outside the bowel in the midsigmoid area, which was interpreted as an abscess cavity (Fig. 6).

Cystoscopy revealed on the roof of the bladder a tumor mass which was elevated, inflamed, and very edematous. During the taking of a biopsy, an abscess was opened and a thick, purulent material streamed into the bladder. The patient had no undue reaction from this procedure and made a prompt recovery on bladder drainage. The pathologic diagnosis was chronic cystitis with cystitis nodularis.

The patient was treated with antibiotics, showing marked improvement in symptoms and a diminution of pus in the urine. The last cystoscopy on Sept. 29, 1960, showed a depression and scarring on the left side of the fundus, but no injection of the adjacent mucosa. She was asymptomatic, and the urine was negative.

Case 8. A 65 year old man was admitted to the hospital on June 29, 1960. For 2 weeks he had been

FIG. 6

Barium enema illustrating an abscess communicating with diverticulum of sigmoid colon. The patient had pneumaturia.

complaining of pyuria, dysuria, and passing air per the urethra at the end of urination. His family physician had treated him with antibiotics which temporarily relieved the dysuria and stranguria. The patient gave a history of a peptic ulcer 20 years previously but denied recent symptoms.

Physical examination showed a B.P. of 130/80. He was a well-developed and nourished man, whose examination was negative except for tenderness in the suprapubic region on deep palpation.

Laboratory studies. The PCV. was 38%, Hgb. 11.7 Gm., and WBC. 9,700, with filamented cells 73%, lymphocytes 25%, and eosinophils 2 per cent. The N.P.N. was 34 mg. per 100 ml. Urinalysis showed a pH of 5, specific gravity 1.016, no albumin nor sugar, and on microscopic examination was found loaded with WBC. Blood sugar was 95 mg. per 100 ml. Urine culture showed *Esch. coli* 100,000/ml.

Cystoscopic examination revealed an irregular mass on the left side of the floor of the bladder causing a convexity of the bladder wall. This mass was approximately 3 by 5 cm. in diameter. The bladder mucosa of the involved area showed marked inflammatory changes with bullous edema. The remaining portion of the bladder wall appeared normal. On careful inspection of the abnormal area no fistulous opening could be found. A biopsy of the bladder wall was reported as normal.

Chest x-ray film was negative. An upper G.I. series revealed a chronic duodenal ulcer without activity. The barium enema showed much diverticulosis throughout the entire colon. An obstructive lesion was reported in the sigmoid on the basis of diverticulitis and sigmoiditis rather than a neoplastic process.

The patient refused operation and was released on July 9, 1960. He was relieved of his urinary symptoms when treated with antibiotics on an outpatient basis, but the pneumaturia persisted.

Summary

In our series of 8 cases, the ages ranged from 54 to 81 years. There were 3 women and 5 men. A hysterectomy had previously been performed on one of the women. Pneumaturia was present at some time during the course of the disease in all cases. The fistula in 7 of the cases was due to diverticulitis of the colon and in one to carcinoma of the rectosigmoid. The detection of a grayish white, tooth paste-like extrusion of pus coming from the opening of the fistula was noted in 3 instances. The fistulous tract was demonstrated in 3 cases with diverticulitis, by injecting opaque material through a small ureteral catheter, which had been placed in the opening of the fistula. Repeated cystoscopies were necessary in 50% of the cases to confirm the diagnosis. By x-ray examination the upper urinary tract was found unaltered in 7 cases, but severely damaged in one case. Five patients were treated surgically. In one case where the diseased area of sigmoid colon was not resected, the fistula recurred. Good results were obtained in all instances where the lesion was removed at one operation without a diverting colostomy. It was necessary to treat 3 patients medically, and in one case there appears to be complete healing of the fistula. There were no deaths.

Conclusion

The subject of vesicointestinal fistula has been reviewed, and the summary of a small series of cases found in private practice presented. We stress the advantage of doing a one stage operative procedure when feasible, in which the fistula, a segment of diseased bladder, and involved sigmoid colon are removed.

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Secondary Malabsorption Syndrome Produced by Chronic Strongyloidiasis

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In describing two instances of malabsorption secondary to strongyloidiasis, the authors have added another new and rare entity due to helminthic infestation.

ADLERSBERG[1] has defined the primary malabsorption syndrome as a genetically transmitted metabolic disorder. He further points out that despite the genetic anlage, malabsorption syndrome may become manifest at various periods of life, in infancy or childhood as celiac disease or later in life as tropical or nontropical sprue.

Secondary malabsorption syndrome can be best distinguished from the primary type by the presence of gross pathologic alterations in the gastrointestinal tract in the former. These lesions may involve the pancreas, liver and biliary tree, or small bowel. The two types may mimic each other clinically, but should be carefully separated.[1] Perhaps the commonest cause of secondary malabsorption is extensive resection of the small bowel. Most of the lesions producing secondary malabsorption are not subject to effective curative procedures. It is therefore of interest that malabsorption can be secondary to strongyloidiasis, and if correctly diagnosed does respond to an effective antihelminthic.[2]

We are not aware that malabsorption has been previously described as being secondary to helminthic infestation. It is of interest then to record the following examples of malabsorption secondary to strongyliodiasis and comment on the pathogenesis of the lesions encountered on two autopsied cases.

Case Reports

Case 1. C. F. was a 23 year old white man, born and reared in eastern Kentucky, whose first gastrointestinal symptom in 1956 was sudden severe hematemesis while in the military service at Ft. Knox, Kentucky. He was hospitalized, given transfusions and returned to duty 3 days later. He was not advised as to the source of the bleeding. Two years later, in December 1958, while working as a painter in Indianapolis, Indiana, he began to vomit immediately following meals. He continued to have upper intestinal symptoms and was diagnosed radiologically as having regional enteritis involving the distal stomach, duodenum and proximal jejunum. Treatment with various medications produced intermittent relief but there was gradual progression of the disease.

He was admitted to the Louisville General Hospital on April 27, 1959, very cachectic, weak and dehydrated. His weight was 106 pounds, having been 170 pounds 4 months earlier. The only other abnormal physical findings were: slight tenderness in the upper abdomen, slightly enlarged cervical and supraclavicular lymph nodes, and left epididymitis.

Upper gastrointestinal x-rays showed marked stenosis of the entire duodenum (Fig. 1) with other segments of the small bowel not identified because sufficient barium did not pass through the duodenum. On admission the Hgb. was 9.4 Gm., WBC. count 12,500, with 78% polymorphonuclears, 20% lymphocytes and 2% monocytes. The urine showed a trace of albumin and many WBC. Fasting blood sugar was 65 mg., N.P.N. 28 mg. per 100 ml., chloride 81, CO_2 34, sodium 129, and potassium 4.7 mEq./L. A stool specimen showed a trace of occult blood. The VDRL. was nonreactive. Cephalin flocculation was negative after 48 hours, thymol turbidity 0.6 units. Total serum protein was 4.0 Gm. with albumin 2.0 Gm. and globulin 2.0 Gm. per 100 ml.

An exploratory laparotomy performed on May 4 revealed generalized edema and thickening of the proximal stomach and entire small bowel with marked mesenteric lymphadenopathy. A gastrostomy was performed and a feeding tube inserted into the proximal jejunum; appendectomy was also done. The patient's postoperative course was afebrile; however, he progressively became weaker. He became hypotensive on May 13, 1959, and died the following day.

Autopsy Examination. At autopsy the body was found to be markedly emaciated and dehydrated with numerous petechiae over the skin of the abdomen. The abdominal cavity revealed acute peritonitis. There was marked thickening (1 to 1.5 cm.) and petechiae of the mesentery of the small bowel. The mesenteric lymph nodes were hyperplastic and matted, measuring

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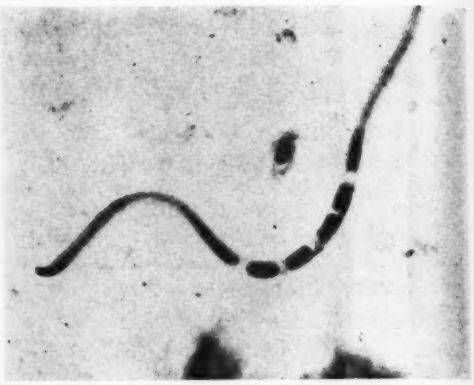
FIG. 1

Barium studies show distortion and marked narrowing of distal stomach, duodenum and proximal jejunum.

up to 2.5 cm. in diameter. When the mucosa of the gastrointestinal tract was examined the esophagus and fundus of the stomach did not appear remarkable; however, there was a band of ulceration over an area of 4 to 8 cm. above the pyloric valve. The mucosa in the prepyloric area of the stomach was dark red, thickened and showed complete loss of the usual rugal folds. The submucosa of the pylorus and antrum of the stomach was edematous. The mucosa of the duodenum and proximal half of the jejunum showed marked thickening, it was dark red with a coarsely granular surface and almost complete loss of the usual folds. The thickening of the mucosa and edema of the submucosa had caused considerable narrowing of the lumen of the intestinal tract and there were numerous shallow ulcerations. The distal jejunum and ileum presented a rather normal mucosa with the exception of scattered shallow ulcerations. There were a few small shallow ulcerations in the cecum and proximal ascending colon. The remainder of the colon and rectum was not remarkable.

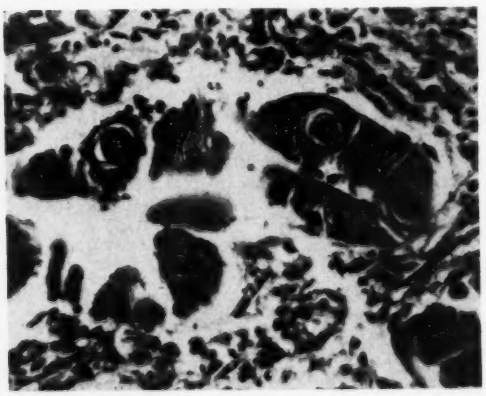
FIG. 3



Wet preparation of aspirated duodenal contents showing egg and adult female of *Strongyloides stercoralis*.

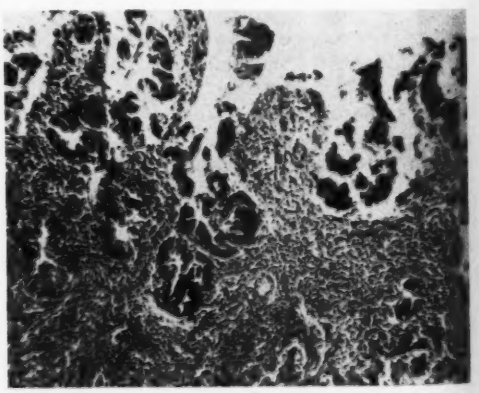
Microscopic examination of the distal stomach showed many of the rhabditoid larvae of *Strongyloides stercoralis* in the mucosa (Fig. 2). Wet preparations of scrapings of the mucus in the duodenum showed numerous adult females (Fig. 3) and rhabditoid larvae. The mucosa of the duodenum showed extensive ulceration and infestation of parasites. These areas had edema, chronic inflammation and small granulomas (Fig. 4). Two nests of eggs were found in Brunner's

FIG. 2



Numerous parasites cut in cross section in small bowel mucosa.

FIG. 4



Section of small bowel showing infestation with parasites, loss of epithelium and severe chronic inflammatory reaction.

glands. The markedly thickened mesentery of the small bowel had *Strongyloides* larvae in thin walled vascular channels (Fig. 5) and in the periphery of the numerous hyperplastic lymph nodes (Fig. 6). In the lungs there were numerous old and recent hemorrhages with abundant hemosiderin deposits. There were patchy areas of emphysema. The heart had hemorrhages in the epicardial and subepicardial fat. The pancreatic ducts were dilated with abundant inspissated secretions and there were some ducts containing larvae of *Strongyloides stercoralis*. There was fatty metamorphosis of the liver. The adrenals showed marked depletion of cortical lipid. The appendix which had been removed at the time of the exploratory operation, 10 days prior to death, was remarkable in that it was dilated and filled with calcified spherules approximately 2 mm. in diameter.

No other type of intestinal helminth was found either grossly or microscopically.

Final Diagnoses. (1) Malabsorption syndrome secondary to helminthic infestation, *Strongyloides stercoralis*, involving stomach, small intestine, pancreas, mesentery, gallbladder and abdominal lymph nodes; (2) "death ten days after abdominal laparotomy for exploration of small intestine"; (3) fresh and old hemorrhages of the lungs; (4) petechiae of the heart, lungs and skin; (5) acute suppurative epididymitis; (6) severe malnutrition; and (7) fatty metamorphosis of the liver.

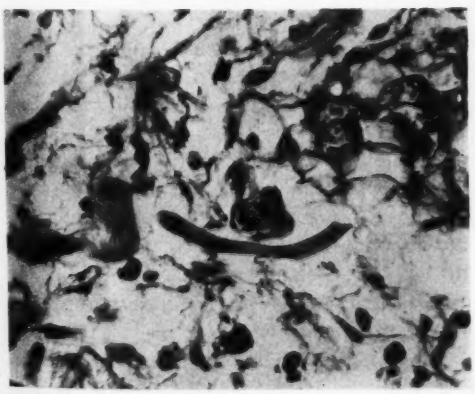
Case 2. D. B., a 16 year old white boy from eastern Kentucky, had been treated for many years for lesions of the mouth and nose. These were described as small areas of whitish exudate over the buccal mucosa and tongue with thickening of the skin and a red macular rash over the bridge of the nose. He began to lose weight during the summer of 1958 and was seen in September 1958 complaining of epigastric tenderness, burning pain in the epigastric region and vomiting without diarrhea. He developed a fine papular, pruritic rash over his abdomen and back. The vomiting persisted and contained old and bright red blood. He was treated with antibiotics and steroids with no improvement.

Toward the end of September 1958, he had developed fever with coarse rales in both lungs. Chest film showed complete lung involvement by a process that was interpreted as tuberculosis or other granulomatous disease. He continued to have intermittent abdominal pain with vomiting. He became progressively weaker and died with progressive anoxia on Oct. 8, 1958.

During the last 8 days of September, 6 stool examinations and 3 sputum examinations showed *Strongyloides stercoralis*.

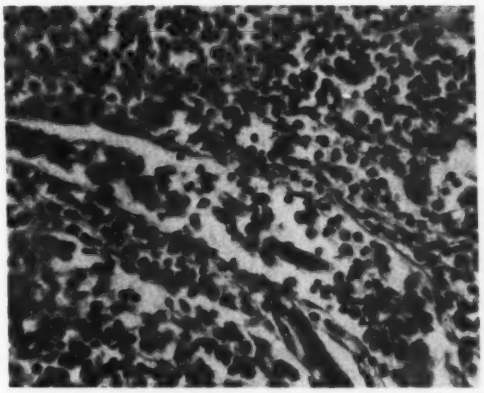
Autopsy Examination. At autopsy the body was found to be markedly emaciated, with edema of the lower extremities and a moderately distended abdomen. The left lung weighed 1,255 Gm. and the right lung 1,400 Gm. There was diffuse consolidation which, on microscopic examination, showed alveoli containing a cellular and fibrinous exudate with numerous spherical encapsulated structures morphologically similar to *Cryptococcus neoformans* (Fig. 7). The stomach, duodenum and jejunum were moderately dilated and

FIG. 5



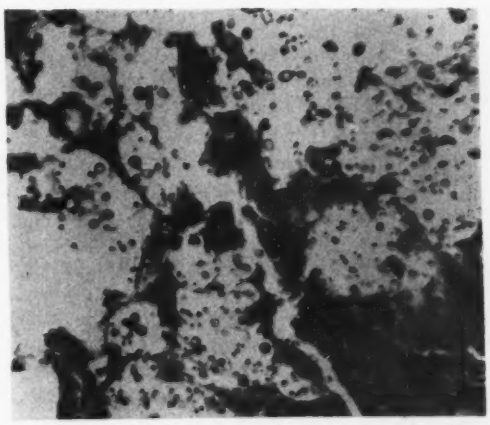
Larvae in mesentery.

FIG. 6



Larvae in lymph node sinus.

FIG. 7



(Case 2) The alveolar spaces of the lungs are uniformly filled with fungi morphologically consistent with *Cryptococcus neoformans*.

showed almost complete ulceration of the mucosa. Adults, larvae and eggs of *Strongyloides stercoralis* were found on mucosal scrapings. Tissue sections showed edema with lymphocytic, plasmacytic and neutrophilic leukocytic infiltrate. There was extensive, patchy ulceration of the distal stomach. Sections from the jejunum showed scattered shallow ulcers and numerous adult and larval forms of *Strongyloides stercoralis* embedded in the remaining mucosa.

Final Diagnoses: (1) Malabsorption secondary to strongyloidiasis, (2) ulcerative gastroenteritis, (3) emaciation, and (4) cryptococcal pneumonia.

Discussion

The first patient died of undiagnosed *Strongyloides stercoralis* infestation 10 days after exploratory laparotomy. The preoperative diagnosis was *regional enteritis*. He was extremely malnourished and failed to improve following exploration. The discrepancies in his clinical diagnosis were recognized by the clinicians and yet no satisfactory explanation of his symptomatology could be made. The second patient had a two and one-half year history of recurrent monilial infection of the nose and mouth. For six months he had shown progressive weight loss and was hospitalized three weeks prior to death for persistent vomiting and epigastric distress. Terminally he developed a *Cryptococcus* pneumonia. Although larvae and adult forms of *Strongyloides stercoralis* were found on six stool examinations and three sputum examinations, the role of this parasite was not appreciated until autopsy.

The mechanism of death in both cases was starvation associated with extensive destruction of the mucosa of the proximal small intestine. This area is the predominant site of active absorption of carbohydrates and to some degree proteins.[4] Obstruction and disturbance of normal peristalsis were additional important factors in producing this state of slow and progressive starvation.

Although there was infestation of the pancreatic duct in Case 1 the duct was not obstructed and the pancreas was not otherwise damaged. There was no indication of involvement of the biliary system. The distal small bowel has been shown to be the most important site of fat absorption in the dog and probably the rat.[5] Although proof is lacking that this is true of the human, it is noteworthy that in neither of these patients was there clinical evidence of impaired fat absorption, and in neither case was there involvement of the distal small bowel.

The terminal event in patients with severe malnutrition is often some type of secondary infection. Brown and Perna[3] reported a case of strongyloides infestation in which the patient was malnourished and died of *Esch. coli* septicemia. They thought the septicemia was precipitated by the larvae carrying the bacteria on their surface or in their intestinal tract in migrating from the intestine to the blood stream. In both of our cases infection was the terminal event.

The correct antemortem diagnosis would seem to depend on the awareness of the existence of this disease, and the realization that strongyloidiasis must be considered along with giardiasis in regional enteritis involving the duodenum. A laboratory diagnosis of strongyloidiasis is most commonly made by the identification of rhabditiform larvae in the stool by wet saline preparations. If the larvae in the stool are not numerous they may be missed. The Baermann technic may be used to concentrate the larvae and thus increase the chances of recovery. In cases where auto-infection is occurring, the appearance of larvae in the feces is greatly reduced because they are developing in the intestinal tract into infective, filariform larvae and penetrating the intestinal mucosa without appearing in the feces. In such cases the laboratory diagnosis is made by examining aspirated duodenal contents, or if vomiting occurs, examination of the vomitus. Occasionally the larvae may be observed in sputum because of their passage through the lungs, bronchial tree and trachea. Such recoveries from the sputum may occur more commonly in the auto-infective types of infection because there is an almost continual migration of larvae through the respiratory apparatus.

Strongyloidiasis should be considered in a patient with progressive starvation regardless of the geographic location. In 2 fatal cases reported recently there was apparently a latent period of 16 years in one[6] and 36 years in the other.[3] This points to the need for a good epidemiologic history and an awareness that the auto-infective episode may occur many years after exposure to the parasites.

Treatment with dithiazanine is reported effective and relatively free of side effects.[2] The recommended dosage is 200 mg. three times daily for 14 to 21 days.

Summary

Two cases of malabsorption secondary to *Strongyloides stercoralis* infestation and autoinfection are reported. In both instances malnutrition complicated by infection was the cause of death.

The basis of malnutrition was malabsorption secondary to mucosal destruction of the distal stomach and proximal small intestine. Malabsorption of fat was not clinically apparent in either case.

The mechanism of the production of the disease process is discussed and the means and necessity of identifying the underlying cause of this type of secondary malabsorption are emphasized.

Acknowledgment: We wish to express our thanks to Dr. Joseph C. Denniston and Dr. Edward T. Thorsness for their permission to include Case 2 and for furnishing us with data and autopsy material.

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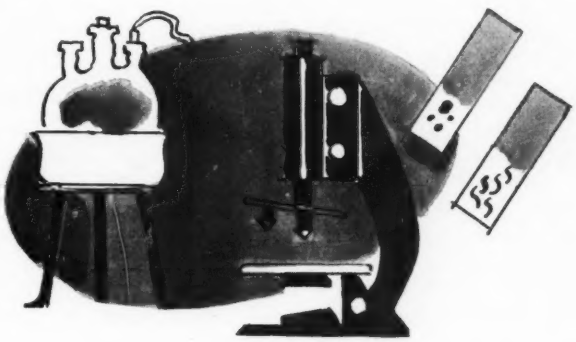

Results of Gelfoam Technic in Stapedectomy*

MILES L. LEWIS, JR., M.D., *New Orleans, La.*

The author is well satisfied with the results obtained by use of the technic described. He anticipates relatively few regressions in the auditory results.

SURGICAL EFFORTS to restore hearing in deafness due to otosclerosis began in the latter half of the last century. Early attempts, directed toward the stapes itself, consisted of its mobilization and even removal. Because initial success was usually followed by regression and because serious complications were common, direct operation on the stapes was abandoned early in this century. Attempts were then made to by-pass the otosclerotic lesion by creating an opening in the otic capsule away from the oval window. Fenestration of the horizontal semicircular canal was performed by early workers in Europe and eventually was perfected by Lempert[1] of New York City in 1938. The fenestration operation has withstood the test of time and gives predictable, lasting results when patients are carefully selected and the operation is properly performed. It is, however, time-consuming and leaves a mastoid cavity which requires perpetual care, is associated with an inherent conductive hearing defect of 20 to 25 decibels, and imposes certain restrictions on the activity of the patient. For these reasons, lack of enthusiasm on the part of the patient and surgeon developed, and attention was again turned toward direct attack on the stapes itself and creation of a more normal sound-transmitting system. Rosen[2] deserves credit for reviving interest in the direct attack on the stapes. Shea,[3] Fowler,[4] House,[5] Schuknecht,[6] and Kos[7] further developed technics in this country, and Portmann[8] of France has devised ingenious procedures for handling the stapes in otosclerosis.

Today the trend has definitely turned toward removal of the stapes and away from the fenestration and more conservative stapes operations. Most otologists in this country proceed to complete stapedectomy in all patients with otosclerosis selected for operation, cover the labyrinthine fistula with various materials (vein, Gelfoam, mucosa, or fat), and reconstruct the stapes by use of polyethylene or wire prostheses. Most surgeons who advocate these technics are enthusiastic about their results, and almost all patients are satisfied with the results. Serious labyrinthine complications occur postoperatively in a small number of patients who lose hearing in the ear operated upon. However, these complications have occurred in all operations for otosclerosis and are apparently no more frequent after competently performed stapedectomy than after the fenestration operation.

Technic

Stapes operations have been aptly called "microsurgery of the ear." These technics are exceedingly difficult and can be performed only with the aid of an operating microscope. In no other operative procedure are tolerances less nor are the individual surgeon's ability and dexterity more important to good results. One of the difficulties in training the young otologist today in stapedectomy is his lack of opportunity to experience or observe a large number of simpler mobilization procedures to develop his technic and to become familiar with the anatomic structures and pathologic lesions of the middle ear.

The following technic is used routinely, except in revision operations on patients in whom the lenticular process of the incus has been damaged. In these, none of whom are included in this series, wire-fat graft technic described by Schuknecht[6] is used.

The canal is cleansed and dusted with

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Neosporin powder in the office the day before operation. The canal is cleansed on the operating table with 1:1000 aqueous benzalkonium Cl (Zephiran) solution, and appropriate sterile drapes are applied.

Local anesthesia is obtained by injection of a 2% lidocaine solution with epinephrine through a 25 gauge needle at the junction of the outer third with the medial two thirds of the membranous external auditory canal at 9 o'clock, 7 o'clock (below the tympanomastoid suture), and at 3 o'clock in the right ear. A total of 0.5 to 1.0 cc. of solution is injected.

The incision is made with a rounded 45 degree angle knife beginning at 9 o'clock, 6 mm. lateral to the tympanic membrane and extending to 1 mm. lateral to the tympanic membrane at 12 o'clock and 6 o'clock. Thus, a V-shaped incision, with the point of the V external, is created. The flap is dissected medially to the middle ear mucosa. Hemostasis and retraction of the flap are obtained by use of small cotton balls soaked in 1:1000 epinephrine solution. The middle ear is entered with a curved pick. An attempt is made to retract the chorda tympani forward. The flap is then elevated carefully both above and below the chorda tympani to permit maximum exposure of the middle ear space. Bone from the medial aspect of the osseous external auditory canal is removed in a posterosuperior direction by use of curettes. The entire oval window area and stapedius tendon are thus exposed. Care is taken to preserve the chorda tympani nerve.

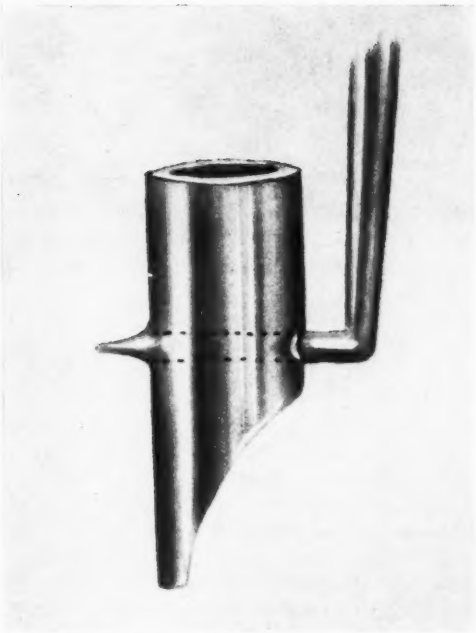
The stapedius tendon is cut at its origin by use of a Wright-Guilford mucosa knife. This same instrument is used to elevate the incus slightly to determine the line of demarcation of the incudiostapedial joint, then to incise and separate this joint carefully. With the Shea anterior curotomy knife the anterior crus is carefully cut without mobilizing the stapes footplate. Rarely is it necessary to cut the posterior crus. The stapes superstructure is then displaced toward the promontory and removed. The oval window area, which can be visualized far better than with the intact stapes in place, is inspected. The mucosa is incised along the superior, anterior, and posterior margins of the oval window and is dissected free of the stapes footplate. An attempt is made to preserve this mucosa attached along the lower margin of the oval window at the promontory, although this is not always possible if the mucosa is thin or the footplate is in a deep niche.

At this point the thickness of the footplate can be observed. If thick, it must be carefully thinned, with the Richard's Shea drill, to translucency throughout its entirety, including the annular ligament. Care must be taken not to perforate the footplate or to dislodge it medially until the thinning has been accomplished.

The distance between the footplate and the long process of the incus at the lenticular process is then carefully measured by use of the House strut measures. A small cotton ball soaked in a solution of epinephrine is placed over the oval window area and another over the incision. The strut is fashioned under the microscope of #90 polyethylene tubing and is designed to be of accurate length and shape to fit from the incus to the oval window without touching either the promontory below or the facial nerve above. The strut is held by passing a right-angled hook through both sides of it, and it is entered 1.5 mm. below its distal end from the side of the bevel (Fig. 1). The cotton balls are then removed, and the strut is positioned for size and fit and is altered, if necessary.

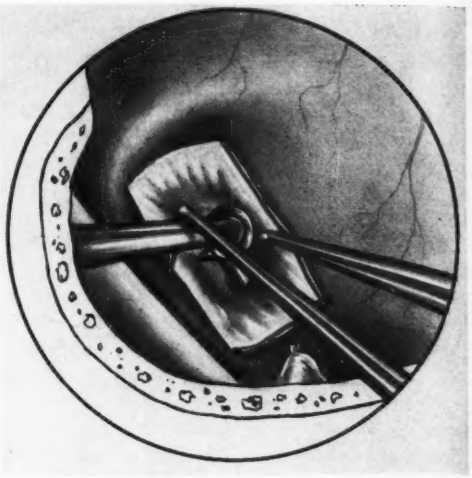
With a fine probe knife the footplate of the stapes is sectioned across its middle, and, if necessary, is loosened at its points of fixation with a fine chisel. The footplate is then removed in two segments by use of microscopic hooks. Loss of a portion of the footplate into the vestibule is undesirable, but attempts to remove such portions are likely to result in serious damage to the membranous labyrinth, and many patients in whom portions of the footplate have been left in the vestibule have lasting good hearing. This is the most difficult portion of the procedure, and I have found it essential to use 25 power magnification to accomplish it without trauma. Any preserved mucous membrane is then laid over the open oval window, and the oval window is covered with a flattened piece of dry Gelfoam of approximately 4 by 5 mm. in size. The portion overlying the oval window is slightly invaginated until it becomes moist with perilymph and stays in position.

FIG. 1



Method of holding polyethylene strut for placement.

FIG. 2



Method of placing polyethylene strut between incus and oval window.

The ear speculum is held by the surgical nurse to free both hands of the surgeon for placement of the strut. A short right-angled hook is used to elevate the long process of the incus. The strut is placed in position with the other hook and is guided onto the lenticular process. The hook elevating the incus is then removed and is used to move the incus medially to force the lenticular process into the strut. While held in this position, the hook holding the strut is slipped out with ease, and the strut is left in position (Fig. 2). This method of placing the strut has the advantage of positive control of the strut and prevention of trauma to the membranous labyrinth by insertion of the tip of the strut too deeply into the vestibule. No "pumping" of the incus is advocated, but if there is no obvious gain in hearing, one may gently seek the stapedius reflex and reposition the medial tip of the strut in the oval window, if necessary.

The round window area and hypotympanum are freed of clots by suction and the tympanomeatal flap is replaced. No packing is used, but a piece of Gelfoam soaked in epinephrine may be placed over the incision if bleeding is active at the end of the procedure. The Rinne test is done with the 512 cps tuning fork, the patient's ability to repeat whispered numbers is determined, and a sterile piece of cotton is placed in the outer ear canal.

Light sedation is used preoperatively, since the patient is more cooperative if not heavily sedated. Administration of broad-spectrum antibiotics is begun the day before operation and continued for 5 days postoperatively. Patients are routinely discharged the day after operation, at which time the ear canal is freed of clots by suction and an air conduction audiogram made. The patient is next seen 4 weeks postoperatively for removal of the crust over the incision and for speech and pure tone audiometric examination. These tests are repeated 4 months and 12 months postoperatively. The best hearing level is obtained at 4 months. Many patients will demonstrate some hearing loss at 4000 cps one month after operation.

Results of Gelfoam Stapedectomy

The foregoing technic has been performed 215 times between Oct. 16, 1959, and Sept. 16, 1960. Hearing has been restored to the 30 decibel level or better for the frequencies 500, 1000, and 2000 cps in 200 (93%) of the patients operated on. The air-bone gap was closed or overclosed in 118 (55%) patients

and was 10 decibels or less in 174 (81%) patients. There was less than 50% closure of the air-bone gap in 7 patients and no appreciable gain in hearing in 6 patients.

Hearing was made definitely worse in 2 patients, both of whom had severe labyrinthine symptoms in the immediate postoperative period. In both, trauma to the labyrinth must be assumed although it was not recognized at the time of operation. Severe labyrinthine symptoms occurred in 5 (2.3%) patients.

The drill was used extensively in 40 (18%) patients, one of whom had loss of hearing from the preoperative level. During the early postoperative period, 4 patients had otitis media due to *Pseudomonas aeruginosa*. All responded favorably to local therapy without labyrinthine complications, and good results in hearing were obtained in all.

Facial paralysis, suppurative labyrinthitis, and cerebrospinal otorrhea did not occur in this series. In 12 (5.5%) patients delayed and sometimes recurrent symptoms referable to the inner ear and suggestive of endolymphatic hydrops developed. These patients will be the subject of a subsequent report.

Comparison With Previous Technics

It is of interest to compare results of stapedectomy by the Gelfoam polyethylene strut technic with two previous technics I have used. In 64 procedures done between Sept. 15, 1958, and Oct. 2, 1959, mobilization of the footplate, anterior curotomy, and crual repositioning were used. In 47 (73%) patients initial good results continued for 6 months or longer. Excessive otorrhea of cerebrospinal fluid occurred in 2 patients, in both of whom anterior chiseling was used. One operation (1.5%) resulted in a "dead ear."

In a third group of 72 patients operated on between Oct. 15, 1958, and Oct. 15, 1959, the superstructure of the stapes was removed and a polyethylene strut was inserted from the incus to the shattered footplate. Restoration of hearing to the practical level was obtained in 57 (79%) patients. The air-bone gap was closed in 27 (37%) patients and was 10 decibels or less in 51 (71%) patients. One patient (1.3%) suffered severe loss of hearing by this technic.

By comparison with previously employed technics, the procedure herein described has been safer in my experience and has resulted in far higher postoperative levels of hearing, with few regressions. Approximately 400 stapes mobilizations done by trans-incus and stapes capitulum technics have not been included in this study, but it is doubtful that more than 30% of these patients maintained a significant gain in hearing.

Summary

The technic of stapedectomy using Gelfoam and a polyethylene strut for the restoration of hearing in patients with deafness due to otosclerosis has been described in detail.

Results in 215 consecutive operations performed by this technic have been presented and have been compared with smaller series of two previously employed technics.

Conclusions

In my experience, stapedectomy using Gelfoam and a polyethylene strut has proved to be a safer procedure for restoration of hearing in deafness due to otosclerosis and has yielded better hearing levels than other surgical procedures. The follow-up period in this series is of short duration, but indications are that regressions necessitating secondary operations will be few. It will be interesting to compare the long-term results of this technic with other advocated technics of stapedectomy.

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CASE REPORT

Fatal Hypersensitivity Reaction to Antituberculosis Medication

MICHAEL J. MOORE, M.D., and DANIEL LEAVITT, M.D., *Roanoke, Va.*

This case report adds yet another drug which has shown its toxicity, with death, as a result of an arteritis. These cases are of exceeding interest because of the plausibility of an iatrogenic factor in the increasing number of instances of the "collagen diseases" today.

THE PURPOSE OF THIS ARTICLE is to report a fatal reaction of hypersensitivity which followed drug therapy with isoniazid and streptomycin. In view of the belated recognition of the cause of the illness, we cannot say dogmatically which drug was to be incriminated, or whether the patient was actually sensitized to both of them.

Case Report

J. B. C., a 70 year old white man, had six admissions to sanatoria for treatment of tuberculosis; the dates of these as well as therapy received is summarized in table 1. Upon his 1955 admission to Catawba Sanatorium he was found to be thyrotoxic, was transferred to the Blue Ridge Sanatorium, and then to the University of Virginia Hospital for operation. The thyroidectomy was performed on Sept. 23, 1955. Hospitalization was uneventful except for two blood transfusions. After his return to Catawba he did well until Jan. 3, 1956, when he complained of pain in the right upper quadrant, and was found to be slightly icteric.

Laboratory studies confirmed the jaundice, and a consulting surgeon favored the diagnosis of common duct stone or pancreatic carcinoma, prompting transfer to Jefferson Hospital on Jan. 13, 1956. The patient's main complaints at that time were soreness of the right upper quadrant, intolerance to certain foods, and gray stools. System review was otherwise negative, except for constipation of two years duration. He did recall an episode of jaundice, cause undetermined, which had occurred 18 years earlier.

He appeared to be healthy except for the icteric sclera. There was a scar of the thyroidectomy. The left heart border was percussed at 9.5 cm. from the M.S.L. in the 5th interspace. His blood pressure was 190/118, and pulse rate 72. The liver was percussed to be approximately normal in size, and palpated two fingers below the right costal margin on deep inspiration. There was no evidence of "spiders" or metastatic nodes, and the remainder of his examination was noncontributory.

TABLE 1

DATES OF ADMISSIONS AND CHEMOTHERAPY RECEIVED

1.	Blue Ridge Sanatorium		April 16, 1932 to Nov. 9, 1935
2.	Catawba Sanatorium		Nov. 3, 1946 to Aug. 28, 1948
3.	Catawba Sanatorium		July 30, 1951 to Aug. 14, 1952
	Streptomycin	1 Gm. on alternate das.	Dec. 8, 1951 to March 7, 1952
	PAS.	3 Gm. p.c. for 90 das.	
4.	Catawba Sanatorium		June 22, 1954 to July 22, 1955
	Streptomycin	1 Gm. twice weekly	July 4 to July 22, 1954
	PAS.	4 Gm. t.i.d.	July 4 to July 22, 1954
	He also received propylthiouracil and digitalis on this admission.		
5.	University of Virginia Hospital and Blue Ridge Sanatorium		July 22, 1955 to Oct. 15, 1955
	Streptomycin	1 Gm. twice weekly	July 22 to Oct. 15, 1955
	Isoniazid	100 mg. t.i.d.	July 22 to Oct. 15, 1955
6.	Catawaba Sanatorium		Oct. 15, 1955 to Feb. 20, 1956
	Streptomycin	1 Gm. twice weekly	Oct. 15 to Jan. 12, 1956
	Isoniazid	100 mg. t.i.d.	Oct. 15 to Jan. 3, 1956

First symptoms referable to liver on Jan. 3, 1956.
Isoniazid withheld on January 3, for 72 hours, and then delayed for another 72 hours on January 6 and not resumed.
Streptomycin discontinued on Jan. 12, 1956.
Transferred to Jefferson Hospital on January 13 and returned to Catawba on Jan. 23, 1956.
Isoniazid and streptomycin resumed on that day and discontinued on Jan. 26, 1956.

The laboratory reported his WBC. count to be 7,400 with 77% neutrophils, 5% stabs, and 18% lymphocytes. Hematocrit was 44%, and urinalysis revealed 10 to 12 hyaline casts per high power field, with 2 to 4 WBC. and 0 to 1 RBC. Liver function tests at that time revealed an alkaline phosphatase of 4.2 Bodansky units, thymol turbidity of over 10 units, van den Bergh, direct of 14.8, and indirect of 20 mg. per 100 cc. There was a slight elevation of the prothrombin time, with no improvement after the administration of vitamin K. Urine urobilinogen was 96 Ehrlich units, and serum cholesterol was 190 mg. per 100 cc. An EKG. revealed normal sinus rhythm with premature ventricular contractions, and runs of bigeminy. The P-R interval was 0.20, the QRS was 0.12, and the rate was 62. Left bundle branch block was present. X-ray examination of the gallbladder was reported as "nonfunctioning."

In view of the laboratory studies, which favored hepatocellular jaundice, and the transfusions 70 days earlier (and the frequent injections of streptomycin), serum hepatitis seemed a very good possibility, and the canceling of his scheduled exploratory laparotomy was recommended. Hepatitis due to PAS. (para-aminosalicylic acid) was mentioned with the suggestion to the Resident in charge of his case that he check with the sanatorium as to medications he was receiving. Over the next few days the jaundice lessened (laboratory tests were in accord) and he felt improved; this prompted his discharge and return to the Catawba Sanatorium on Jan. 23, 1956.

After returning to the sanatorium he received his medications from January 23 through January 26; they were discontinued then because of "possible detrimental effect on liver cell recovery from (viral) hepatitis."

Table 2 summarizes the symptoms and signs, laboratory findings, and therapy after July 1955. He had a

TABLE 2

SEQUENTIAL SUMMARY OF THERAPY, LABORATORY REPORTS AND CLINICAL INFORMATION

Date	*Clinical Information*	*Laboratory Reports*	*Therapy* SM*	Isn*
June 22, 1955		WBC.—6,000; N—68%, L—32%	•	•
July 4			•	•
July 22			•	•
Oct. 17	"Eczema"	WBC.—5,000; N—68%, L—25%, E—6%, M—1%; Hgb.—17 Gm. Urine—1+ alb.; 12 hyaline casts & 5 WBC./hpf.	•	
Jan. 3, 1956	Upper abdominal discomfort Slight RUQ tenderness; slight icterus.	WBC.—4,700; N—72%, L—11%, M—17%, Plasma cell—1; Hgb.—16 Gm.; Icterus index—40. Urine—4 plus bilirubinuria	•	
Jan. 6	Liver palpable 3 f.b. below RCM.	Icterus index—50; serum bilirubin—10 mg.%.	•	
Jan. 7		Cholecystogram—nonfunction	•	
Jan. 9		TSP—6.40; alb.—4.05, glob.—2.35 Gm.; alkaline phosphatase—6 B.U.	•	
Jan. 12			•	
Jan. 14		Cholecystogram—nonfunction; icterus index—54 U; serum bilirubin—20 mg.% (direct—14.8); alkaline phosphatase—4.2 B.U.; Thymol Turb.—over 10 U		
Jan. 16		Urine urobilinogen—96 Ehrlich U; prothrombin time—15 sec., and control—13 sec.		
Jan. 17		Cholesterol—190 Mg.%; ceph. floc.—4+; alkaline phosphatase—5.2 B.U.		
Jan. 18		Icterus index—4.49 U; Prothrombin time—P—18 sec.—control—13 sec.		
Jan. 19		Alkaline phosphatase—5.4 B.U.		
Jan. 20		Icterus index—32 U		
Jan. 22		Icterus index—20 U		
Jan. 23			•	•
Jan. 26		Urine—negative for bile	•	•
Jan. 27		WBC.—6,200; N—71%, L—24%, E—4%, M—1%; Icterus index—40 U Serum bilirubin—4 mg.%	•	•
Jan. 31		Icterus index—40 U		
Feb. 2	"Measles-like skin rash"			
Feb. 7	Pain of right side			
Feb. 8	T—100.8°;left side pain	WBC.—8,800; N—68%, L—21%, E—6%, M—5%		
Feb. 13	Pain of left side			
Feb. 14		Urine—2+ alb.; 30 hyaline and granular casts and 5 WBC. and 10 RBC./hpf.		
Feb. 15	Sudden onset of chest pain while eating	*X-ray*—Considerable density in the base, and to a moderate degree along the periphery of the lung, and in extreme apical region; in 1st and 2nd intercostal space, there is an area of aeration, with hardly any density.		
Feb. 16		WBC.—10,900; N—86%, L—4%, E—10%		
Feb. 17	Pains of both shoulders			Achromycin
Feb. 18	Hemoptysis and pain; dyspneic.	RBC.—4.3 million; Hgb.—14.5 Gm.		Penicillin
Feb. 19	Pain of right side, under ribs.	*Portable chest x-ray*—Right lung reveals scattered mottled haziness in the upper lobe, which becomes more homogenous in the middle lobe, and the lower lobe is completely dense. Left lung—homogenous density from costophrenic angle up to 3rd anterior rib.		
Feb. 20	Respirations increased to 32 and expired.			

*SM—Streptomycin; Isn—Isoniazid.

Lab. reports: N—neutrophils; L—lymphocytes; E—eosinophils; M—monocytes.

"measles-like skin rash" for a few days in early February, and complained of pain of his "right side" on Feb. 7, 1956. On February 8 he had fever of 100.8° which was his only temperature elevation during his illness. From February 13 to February 19, he complained of chest pains, and had some episodes of hemoptysis. The clinical course was "downhill' during this time, and he died on Feb. 20, 1956.

Autopsy Protocol. The autopsy findings were that of a well-developed, well-nourished, 70 year old white man appearing younger than the stated age. There were a number of adhesions about the right upper lobe of the lung, and there was a fibrinous exudate in the left pleural cavity. The other body cavities were dry.

The heart was enlarged; the apex was beneath the 6th rib in the midclavicular line. It weighed 630 Gm. The musculature was uniform and reddish-brown throughout and firm. The coronary vessels were wide, patent, thin, smooth-walled and straight. The aorta was smooth.

The right lung weighed 1,150 Gm. and the left 1,040 Gm. There was dense scarring in the right upper lobe. The walls of the bronchi here were thickened. The right lower lobe contained an area of infarction 5 cm. in diameter. It was depressed, gray, and the pleural surface over it was roughened. The surrounding tissue showed red consolidation. In the artery to the right upper lobe was a well-organized, red-gray thrombus, filling it. The end projected into the right pulmonary artery. In the left was a recent thrombus in the artery to the left lower lobe. A more recent diffuse infarct, approximately 8 cm. in diameter, was found in the left lower lobe. The bronchial tree contained some bloody froth.

The gastrointestinal tract presented little of note.

The liver weighed 1,500 Gm. The edges were 3 finger-breadths below the costal margin and rounded. The cut surface was pale yellow-brown, flecked with red, and protruded above the capsule. The bile ducts were patent throughout.

The spleen weighed 200 Gm.

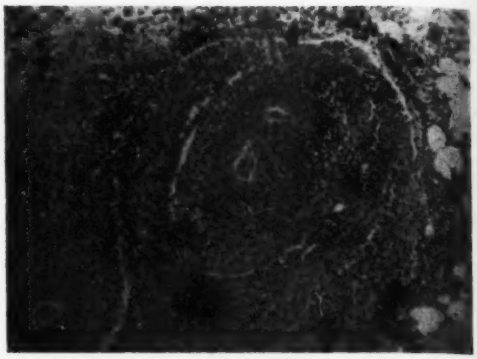
The kidneys together weighed 340 Gm. The capsule stripped with ease revealing an inflamed surface in which there were numerous petechiae. On section, the cortex was swollen and inflamed and contained numerous petechiae. The pelvis was not remarkable.

The adrenals were normal in size, shape, and bright yellow in color.

The histologic findings were described as follows.

The microscopic studies of the lungs show the site of the old tuberculosis to be healed, scarred and with no evidence of recent activity. There is a marked arteritis throughout in various stages of development (Fig. 1). In some areas, there is merely a glassy degeneration of the tissue with early round cell and neutrophil infiltration. This proceeds to intimal proliferation, degeneration of the media and a very heavy round cell and neutrophil infiltration of all layers and the surrounding tissue. At this stage, there are a number of thrombi. There are older lesions showing scarring and hyalinization, organization of the thrombi and either obliteration of the lumen or early recanalization. Sections of the larger arteries show the thrombi noted grossly to be extensions of the previous process. In the infarcted area,

FIG. 1



Active periarteritic and obliterative lesion in lung.

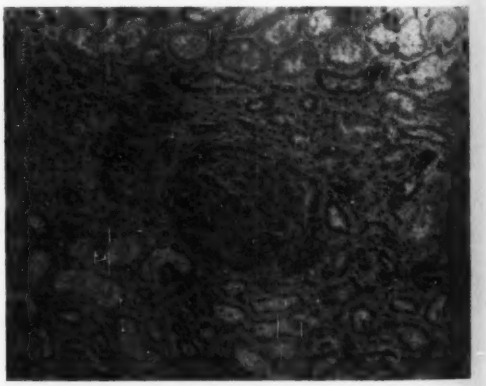
the alveoli are filled with blood. The septa show loss of nuclear detail and neutrophil infiltration. Elsewhere, the lungs show considerable interstitial fibrosis. There are areas of emphysema and a few large blebs. Other areas show atelectasis and a few areas show aeration.

The capsule of the liver is thin. The architecture is well preserved. The portal areas show an increase in the amount of round cells. The central areas are intact. The hepatic cells show an occasional vacuole. There are scattered small collections of round cells and neutrophils in the sinusoids. The whole gives the appearance of an almost completely resolved hepatitis.

The capsule of the spleen is covered with a layer of fibrocytes and round cells. The pulp is congested and contains a definite increase in the number of neutrophils. The splenic follicles are large and distinct. There are areas of arteritis noted within the spleen.

The capsule of the kidney is thin. The glomeruli are in the usual number and distribution. There are a number of crescent forms. The tufts are swollen and infiltrated with round cells and a few neutrophils. One or two tufts present a "copper wire" appearance (Fig. 2). Many show swelling of the basement membrane. Some show partial or complete fibrous replacement.

FIG. 2



Changes in glomerulus with "copper wire" appearance.

The tubules show a cloudy swelling. Some are atrophic. The arteries show arteritis, as noted above. The glomerular lesions appear to be secondary to this.

The adrenals are well preserved. They contain moderate amounts of lipid. There are one or two small areas of arteritis within the adrenals, but there is marked arteritis in the surrounding adipose tissue (Fig. 3).

Discussion

Many reactions with varying manifestations have been reported to medications in recent years, and this is probably a result of the many new and potent drugs, and the increasing alertness of physicians to drug allergy. When this patient was seen in consultation, hepatitis due to PAS. was considered by one of us (M.J.M.), but this impression was disregarded when it was learned that he had not received that drug in recent months. The hepatitis was attributed to homologous serum jaundice as a consequence of transfusions or streptomycin injections, and a previously scheduled laparotomy was canceled. It is ironic that had this exploration been done for carcinoma of the pancreas, as originally planned before the medical consultation, liver and tissue biopsy might possibly have been made at the time of exploration and might have given a hint as to the allergic nature of his disease. As the clinical course and liver function tests were compatible with improvement, he was returned to his sanatorium, at which time isoniazid and streptomycin were reinstituted for three more days. This latter period of therapy was apparently sufficient to cause his death three and one-half weeks later.

FIG. 3

Active periarteritis in periadrenal adipose tissue.

In reviewing drug allergy and periarteritis nodosa-like reactions from medications, the following statement by Dr. Lewis Thomas was noted: "Death is a rare event in drug allergy and there is little information concerning the pathology of the disease. Rich and his associates found typical vascular lesions of periarteritis nodosa similar to the change in experimental serum sickness, in several patients dying with hypersensitivity reactions to penicillin, iodine, thiourea, and Dilantin."[1]

In the therapy of tuberculosis, PAS. had to be discontinued in 1.1% of a large series of patients due to intolerance, whereas only 0.2% of 1,734 patients required discontinuance of streptomycin.[2] The figures for allergic reactions to PAS. have ranged from 4%[3] to 2 to 3%,[4] and these reactions have occurred in almost every imaginable form[5]. One patient was reported who was proven to be hypersensitive to both sodium para-aminosalicylic acid and streptomycin,[6] and there have been reports of anaphylactoid reactions to streptomycin.[7] Instances of intolerance to isoniazid are apparently the least frequent of all[8] and, in 1955, one group of authors commented to the effect, "we have never seen any of these hypersensitivity reactions attributable to isoniazid," while discussing the many allergic reactions to para-aminosalicylic acid.[5] However, a recent review of the subject listed toxic reactions as occurring in 5% of the patients receiving isoniazid, with the more common type a toxic effect manifested by various peripheral neuritides, and the second, and less common, group being allergic in nature and consisting of: dermatitis, drug fever, leukopenia, purpura, and hepatitis. The authors reported the fifth case of hepatitis, and their patient had died from massive hemorrhage from esophogeal varices.[9]

Had this man's illness been recognized, and his medications not resumed, there would still have been the need to determine the drug to which he was sensitized, so his tuberculosis chemotherapy might be reinstituted later. If the cause had been recognized in the last few days prior to his death, he would possibly have received steroid therapy as outlined by Houghton[10] in his article on the treatment of hypersensitive drug reactions in tuberculous patients. There have been reports of hyposensitization with isoniazid[11,12] and this might have been attempted early in his illness if the diagnosis had been proven and the therapy regarded as necessary. It is certainly not a diag-

nostic point, but the fact that he did not have local reactions at the site of his streptomycin injections is a point in favor of the clinical picture being the result of isoniazid therapy, as is the interval between cessation of drugs and decrease of jaundice. The latter periods were 4 days between cessation of streptomycin and decreased icterus index, and 13 days between isoniazid and decreased icterus index.

In reviewing the white blood counts, it was noted that the patient developed eosinophilia while on medication, and this manifestation of possible drug intolerance might be worthy of consideration in any patient on long-term drug therapy. The fact that this patient's illness exacerbated and terminated fatally, after reinstitution of his previous therapy, should be kept in mind when we have a situation in which it is desirable to resume a drug to see if it is the cause of a patient's previous allergic symptoms and signs. It is not our thought that this practice should be discontinued, but the patient's course should be followed closely and, if the physician is actually certain of the offending drug, particular thought should be given to the value of exact diagnosis as compared to possible hazards of the procedure.

With the present-day awareness and alertness of the frequency of drug-induced jaundice, this patient's illness would almost undoubtedly have been recognized, but it is worth stressing once again that the medications of every patient developing jaundice should be reviewed and evaluated as to whether they might be etiologic factors.

Summary

A periarteritis nodosa-like illness, presenting as hepatitis, is described following combined streptomycin and isoniazid therapy. The literature with regard to reactions to the drugs used in the treatment of tuberculosis (PAS., isoniazid, and streptomycin) was briefly reviewed. Emphasis was placed on the frequent occurrence of hypersensitivity reactions with present-day medications and the need for suspicion of, recognition of, and treatment of these reactions when they occur.

Acknowledgments

We wish to acknowledge the assistance and advice given by Dr. Cecil Smith and the Medical Staff of the Catawba Sanatorium.

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Technical Control of Intra-Abdominal Pressure Following Large Ovarian Cystectomies

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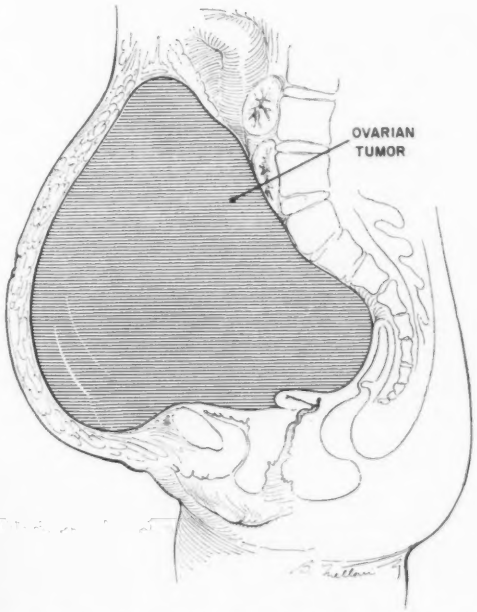
THIS IS A REPORT of the removal of 4 large ovarian cysts.

The first of these following the usual closure of the abdominal incision, had severe symptoms of postoperative orthostatic hypotension. This was manifested by faintness, dizziness and a marked desire to remain in the supine position. The symptoms persisted for months. An external support, an abdominal binder, controlled the symptoms effectively; this was not a foundation type of garment but a true abdominal binder and the wearing of it was uncomfortable. However, the foundation type of garment did not provide the same degree of symptom relief (Case 1).

The problem in a case such as this is one of space. Large ovarian cysts cause progressive stretching of the abdominal wall, primarily manifested by a wide elliptical separation of the rectus muscles and a marked thinning of the tissues normally lying between the muscles. Apparently the tissues of the flank and lateral wall do not respond to the increase in pressure to the same degree. This x-ray film (Fig. 1) in the lateral view shows the displacement of viscera as well as the marked abdominal distention present in Case 2. (A solitary gallstone is present.) A sketch from the side view clearly illustrates the problem of stretching and displacement associated with such large tumors (Fig. 2).

FIG. 1

FIG. 2



Surgical Treatment

Because of the extreme abdominal distention and stretching of the abdominal wall,

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FIG. 3

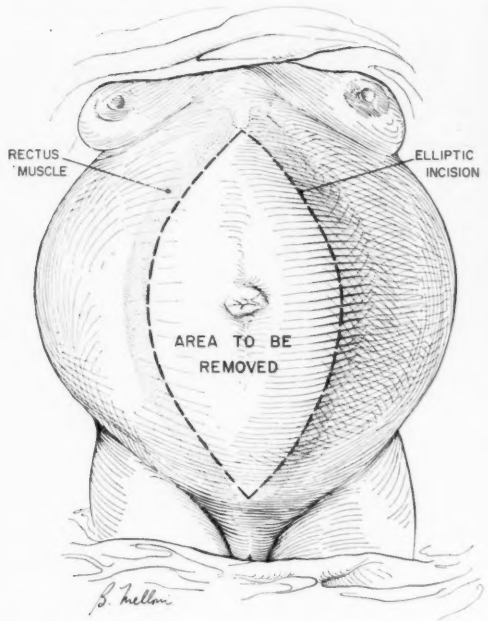


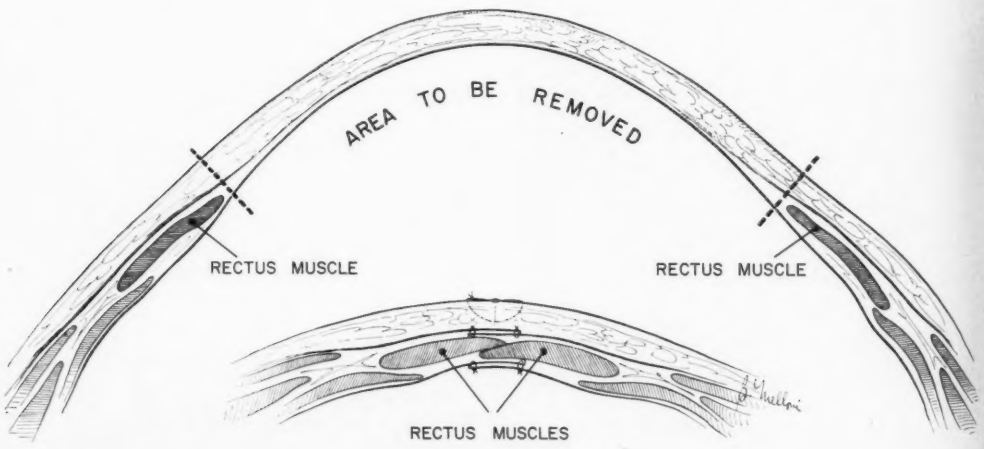
FIG. 4

the necessity of a technical approach that would immediately give the patient effective intra-abdominal pressure at a physiologic level would be desirable. To this end the following procedure was devised.

The skin incision is made in the form of a large ellipse extending from the symphysis to the xiphoid following the medial margins of the rectus muscles throughout their entire length (Fig. 3). This incision is subsequently carried through the entire thickness of the abdominal wall with the removal of this outlined block of tissue.

In the case of the 53 pound cyst, the medial edge of the wound towels show the approximate size and relationship of the tissue that is to be removed (Fig. 4). At this time the intra-abdominal procedures are carried out. Following the abdominal operation the incision is closed as follows.

FIG. 5



The wound edges are first brought together with a continuous suture that approximates the posterior medial edge of one side of a posterior rectus sheath and peritoneum to the posterior lateral border of the other. This closes the peritoneal cavity and if overlapped sufficiently will be a snug but not tight approximation of tissue. The remaining margin of the posterior rectus sheath and peritoneum is sutured down with interrupted sutures with slight tension.

This repaired, imbricated layer of tissue forms the posterior part of what is to be one rectus sheath to accommodate two thinned out muscles. This leaves the nerve and blood supply intact to the bulk of the muscle tissue involved. It also provides an abdominal cavity that is properly full of viscera and this is necessary for the maintenance of a normal intra-abdominal pressure.

The anterior rectus sheaths are duly imbricated with interrupted sutures. A diagrammatic sketch of this abdominal wall closure is shown in figure 5.

Case Reports

Case 1. S. C., a 65 year old white woman, had a chief complaint of slow protrusion of the abdomen over a period of 2 years with rather rapid enlargement in the past 4 months. The operative procedure

FIG. 6

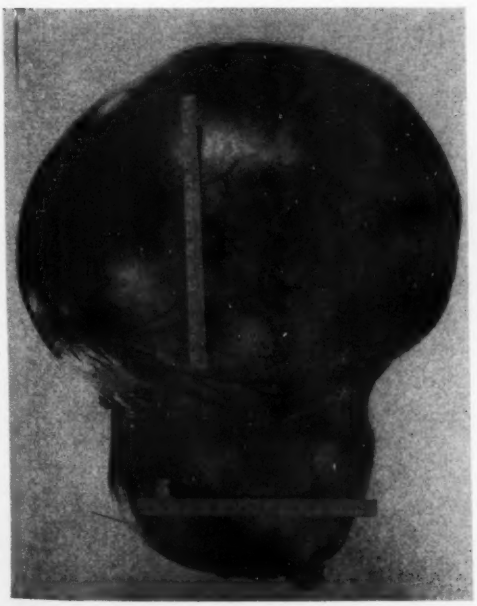
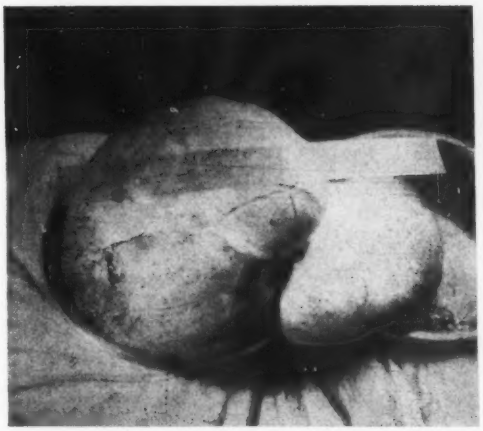


FIG. 7



consisted of total hysterectomy, bilateral salpingo-oophorectomy and appendectomy with routine closure of the incision.

The specimen weighed 20 pounds and the pathologic report was that of a benign lesion (Fig. 6).

The postoperative course was uneventful except for the inability to stand or walk without feeling faint and dizzy unless she had on a snug abdominal binder.

Case 2. S. O. C., an 88 year old white woman, complained of slow enlargement of the abdomen to such size that she could not walk. The uterus had prolapsed from the intra-abdominal pressure to the point of disturbing her walking and her feet and ankles were quite edematous.

The operative procedure was as follows: bilateral salpingo-oophorectomy, suspension of the uterus, cholecystectomy and appendectomy. The abdominal incision was closed as described above. The postoperative

FIG. 8

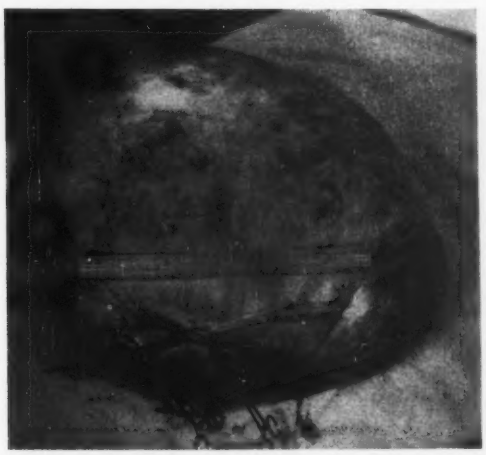
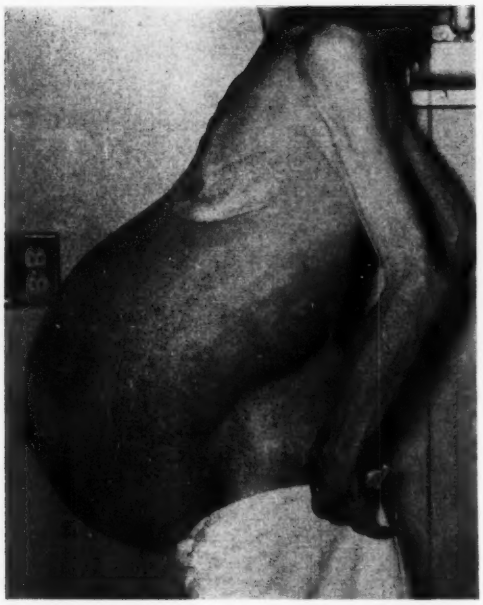


FIG. 9



course was uneventful and there was no evidence of hypotensive phenomena. She was ambulated on the second postoperative day.

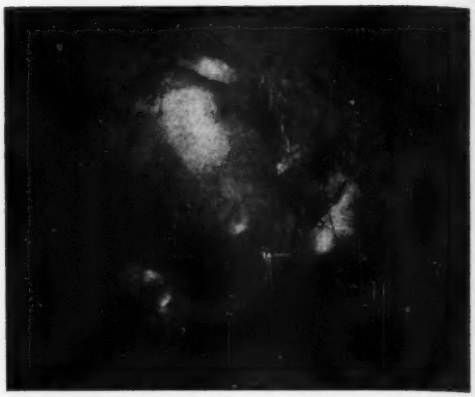
The surgical specimen weighed 53 pounds (Fig. 7). The pathologic report was benign lesion.

Case 3. M. T., a 60 year old white woman, came with a chief complaint of slow increase of abdominal swelling over one year, with associated backache, shortness of breath and difficulty in walking.

The operative procedure was that of total hysterectomy, bilateral salpingo-oophorectomy, cholecystectomy and appendectomy. The abdominal incision was closed as has been described. Hers was an uneventful postoperative course without evidence of

FIG. 10

FIG. 11



orthostatic hypotension. She was ambulated on the first postoperative day.

The surgical specimen weighed 70 pounds (Fig. 8). The pathologic report was benign lesion.

Case 4. M. B. S., a 67 year old white woman, complained of her abdomen "getting so big I cannot carry it." The presence of an abdominal tumor had been known to the patient for 10 years, but there had been a rather rapid growth over the past few months (Fig. 9). The waist measurement was 47 inches.

The operative procedure consisted of subtotal hysterectomy, bilateral salpingo-oophorectomy, appendectomy and suspension of the cervix to anterior abdominal wall. The abdominal incision was closed as described previously. She was ambulated on her second postoperative day. The magnitude of skin incision and tissue to be removed is shown in figure 10.

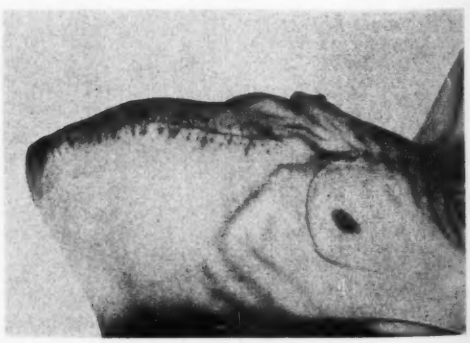
The surgical specimen weighed 47 pounds (Fig. 11), and the pathologic report was benign lesion.

Figure 12, subsequent to operation, was taken at the time the waist measurement was 29 inches.

Discussion

In 3 of these 4 cases the technical procedure described was used. None of these patients

FIG. 12



demonstrated any need for external abdominal support. They were permitted ambulation on the first and second postoperative days without being troubled with any hypotensive symptoms. Their subsequent follow-up data of 2 and 4 years respectively for cases 2 and 3 have not shown any discomfort or abdominal malfunction from the type of abdominal closure used. In a supine position with the head and shoulders slightly raised they still demonstrated one longitudinal band of rectus sheath instead of two. (The fourth case was operated upon too recently for long-term follow-up.)

Summary

(1) A technical procedure for maintaining physiologic intra-abdominal pressure following the removal of large intra-abdominal tumors is presented.

(2) This type of closure of the abdominal wall is comfortable and produces a strong normally functioning abdominal wall.

(3) Four cases of large ovarian cysts are presented.

Fifty-fifth Annual Meeting of Southern Medical Association in Dallas, Texas, November 6-9, 1961

SOUTHERN MEDICAL NEWS

Dr. Leslie V. Rush, left, Meridian, Mississippi, receives the Research Medal of Southern Medical Association from Dr. Guy T. Vise, right, Councilor from Mississippi to SMA, at a meeting of the East Mississippi Medical Society in Meridian on December 8. The medal was awarded to Dr. Rush in absentia at President's Night, November 2, 1960, during SMA's St. Louis Meeting.

The basis for the awarding of this medal is "meritorious and original research work" by a member of the Association. Dr. Rush was deemed worthy of the honor because of his research which resulted in the development of the Rush pin, a versatile intramedullary steel pin for internal fixation of fractures.

State News Items

The Gastroenterology Research Group will hold its twelfth semi-annual meeting at the Drake Hotel in Chicago on May 25, 1961, at 2:00 p.m. The topic of "Gastrointestinal Mucus" has been selected by the Research Group for its program, and five internationally known investigators have been invited to participate in the Symposium. All interested physicians and scientists are invited. For further information write Dr. N. C. Hightower, Secretary-Treasurer, Scott and White Clinic, Temple, Texas.

The Sixteenth Annual Meeting of the Southern Society of Anesthesiologists will be held in Jackson, Mississippi, March 9-11. For further information write Dr. Curtis W. Caine, Chairman, Local Arrangements, 4332 Manhattan Road, Jackson 6, Mississippi.

The Southeastern Chapter of The Society of Nuclear Medicine will hold its second annual meeting in Atlanta, Georgia, March 10-11, in the auditorium of The Academy of Medicine. For further information write Dr. James C. Coberly, Chief, Radioisotope Service, Veterans Administration Hospital, 4158 Peachtree Road, N.E., Atlanta 19, Georgia.

The Johns Hopkins University, School of Hygiene and Public Health and The National Vitamin Foundation will sponsor a one day Symposium on "Mechanisms of Gastrointestinal Absorption," March 7, 9:00 a.m., at Hotel Sheraton-East, New York, New York. Advance registration is requested; there is no registration fee. For further information write Dr. Robert S. Goodhart, Scientific Director, The National Vitamin Foundation, Inc., 149 East 78th Street, New York 21, New York.

The American Board of Obstetrics and Gynecology has scheduled the Part II Examinations, oral and clinical, for all candidates, at the Edgewater Beach Hotel, Chicago, Illinois, April 8-15, 1961. Formal notice of the exact time of each candidate's examination will be sent him in advance of the examination dates. Candidates who participated in the Part I Examination will be notified of their eligibility for the Part II Examinations as soon as possible. Requirements for application and other information may be obtained by writing to the Secretary: Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6, Ohio.

ALABAMA

New officers of the Jefferson County Medical Society are: Dr. S. Buford Word, Birmingham, President; Dr. G. J. Roscoe, Birmingham, President-Elect; Dr. E. B. Robinson, Jr., Fairfield, Vice-President; and Dr. Paul W. Burleson, Birmingham, Secretary-Treasurer.

Dr. S. Joseph Campbell, who served Jefferson County Medical Society as 1959 President, was installed in office as a member of the Board of Censors and Board of Health on January 1.

New members of Jefferson County Medical Society are: Drs. Bruce M. Culvahouse, John T. Eagan, Allen L. Haslup, Stephen Donald Palmer, Robert Marshall Pitts, Richard B. Shepard, and John R. Thompson, all of Birmingham.

Officers of the Alabama Association of Blood Banks formed in November are: Dr. Albert E. Casey, Birmingham, President; Dr. J. D. Bush, Gadsden, President-Elect; and Dr. S. Don Palmer, Birmingham, Vice-President.

ARKANSAS

The 50-Year Club of American Medicine has elected Dr. J. H. McCurry, Cash, founder of the club, Secretary.

Dr. Merrill Grayson, Little Rock, heads the Division of Ophthalmology at the University of Arkansas Medical Center.

New Fellows of the American College of Surgeons are Dr. John B. Jameson, Jr., Camden; Dr. Harley C. Darnall, Fort Smith; Drs. Samuel J. Kuykendall and Jerome J. Landy, Little Rock; Dr. William R. Meredith, Sr., Pine Bluff; and Dr. Glenn P. Schoettle, West Memphis.

Continued on page 216

Lee F. Turlington, M. D.

Lee F. Turlington, M. D.

Southern Medical Association's Fifty-Sixth President

Few members of Southern Medical Association are unaquainted with the new President, Dr. Lee Franklin Turlington, Birmingham, Alabama. A regular attendant at annual meetings since he became a member in 1916, he can call by name hundreds of his fellow physicians—up and down the exhibit aisles, in scientific meetings, and at the social gatherings after hours.

Highly popular in his own home town, his ready smile, keen sense of humor, deep sincerity and gracious manner have endeared him to patients and friends everywhere.

A native of Smithfield, North Carolina, Dr. Turlington received his A. B. degree from the University of North Carolina in 1910 and his M. D. from the University of Pennsylvania Medical School in 1914. His internship was at St. Vincent's Hospital, Birmingham, after which he joined Dr. L. C. Morris, an established gynecologist, and served as First Assistant for two years. He was in the Medical Corps of the Regular Army for about two years and he organized and sent overseas twelve field hospitals. On his return to Birmingham, he was associated with Dr. Morris until the latter's death in 1924.

Dr. Turlington was Secretary of the Section on Gynecology in 1933-34, Vice Chairman in 1935 and Chairman in 1936. He represented Alabama on the Council from 1953-57. He was also Chairman of the important Building Committee when Southern Medical's $250,000 home office-headquarters, in Birmingham, was constructed in 1958.

When the new SMA President can leave his professional duties, he makes straight for his 13-acre plot atop Shades Mountain, cultivating the camellias that have made him almost as well-known a horticulturist as physician. (He is currently serving as President of the Birmingham Men's Camellia Society.) Though the camellia rates at the top of his flower preferences, he is always ready to lend a hand to his wife (the former Miss Olivia White, of Lynchburg, Virginia) in the care of her roses, for which she is famous. This devotee of the glamorous camellia does not turn up his nose, however, at weeding the vegetable garden which supplies family and friends with beans, greens, corn, tomatoes and fruits throughout the growing season.

Dr. and Mrs. Turlington are the envy of many of their friends who have seen their children grow up, marry and leave them. Daughter Lula Rose (Mrs. William C. Blackwell) lives next door and Olivia (Mrs. William C. Miller) just beyond. The seven grandchildren add to the joy of family life—and they, too, are interested in flowers and gardening, and in riding their horses, Betty and Lady.

Dr. Turlington is a member of the American College of Surgeons, Southeastern Surgical Congress, American Medical Association, Alabama Medical Association, Jefferson County Medical Association, Southern Gynecological and Obstetrical Society, Alabama Gynecological and Obstetrical Society, Birmingham Surgical Society and Birmingham Clinical Club.

His extensive professional and community interests include work with the Planned Parenthood League of Alabama, of which he is a past president. He is now Chairman of the Board of the League and has been for many years. He served a five year term as a member of the Board of the Planned Parenthood Federation of America. He is Associate Professor of Gynecology at the Medical College of Alabama.

Dr. Turlington succeeds Dr. Edwin Hugh Lawson, New Orleans, Louisiana, as President of the 15,000-member Southern Medical Association.

SOUTHERN MEDICAL NEWS

Continued from page 212

Drs. Charles H. Barnes and Frank E. Morgan, Little Rock, are new members of the Pulaski County Medical Society.

DISTRICT OF COLUMBIA

Dr. James H. Matthews has been appointed Chief of the Veterans Administration's clinical research in pulmonary diseases.

Dr. Clyde B. Cope has joined the data processing staff of the Veterans Administration Department of Medicine and Surgery at VA Central Office. Dr. Milton I. Schwalbe is director of the staff.

Dr. Allen C. Cross is the new Medical Director of the U. S. Government Printing Office.

Seven members of the D. C. Medical Society were inducted as Fellows of the American College of Surgeons. They are Drs. William H. Cooper, Erman W. Edgecombe, Gordon S. Letterman, J. Winthrop Peabody, Jr., Bernard F. Peacock, John F. Potter and Maxine Ann Schurter. Dr. Peacock is an Associate member while the rest are Active members.

Dr. Joseph W. Peabody, Jr., is the new Second Vice-President of the Southern Chapter of the American College of Chest Physicians.

Dr. W. Fred Mayes is the new President of the Harvard Public Health Alumni Association.

Col. Harvey C. Slocum (MC) was elected President of the American Board of Anesthesiology for the year 1960-1961.

A new member of the Board of Trustees of the National Geographic Society is Dr. Walter K. Myers.

FLORIDA

Several members of the Dade County Medical Association have been inducted as Fellows of the American College of Surgeons. They are Drs. Thomas F. Blake, Albert J. Ehlert, Stephen H. Glucroft, Banning G. Lary, Arturo C. Ortiz, George A. Segal, William A. Shaver and Thomas J. Zaydon, all of Miami.

Drs. Robert Watson and Arthur I. Rudolph, Miami, have been certified by the American Board of Obstetrics and Gynecology.

Dr. DeWitt C. Daughtry, Miami, was recently named President of the Southern Chapter of the American College of Chest Physicians.

Dr. George F. Schmitt, Miami, was re-elected Secretary-Treasurer of the Florida Diabetes Association.

Dr. Stephen C. Wright, Miami, has been elected a Fellow of the American Academy of Child Psychiatry.

Dr. William Curtis Adams, Miami, has been appointed Medical Director of Variety Children's Hospital and Associate Professor of Pediatrics at the University of Miami School of Medicine.

Dr. Morris B. Seltzer, Daytona Beach, became President of the Florida Diabetes Association at its eighth annual meeting recently. Dr. Theodore F. Hahn, Jr., DeLand, became President-Elect and Dr. George F. Schmitt, Jr., Miami, was re-elected Secretary-Treasurer. Members of the Board of Governors are: Dr. Hahn; Dr. Grover C. Collins, Palatka, immediate Past President; Dr. William C. Thomas, Jr., Gainesville; Dr. Joseph J. Lowenthal, Jacksonville; and Dr. Kenneth Phillips, Miami.

Dr. Louis C. Skinner, Jr., Coral Gables, is the new President of the Miami Dermatological Society. Dr. Meyer Yanowitz, Miami, will serve as Vice-President and Dr. Bert L. Peppercorn, Miami Beach, as Secretary-Treasurer.

Governor LeRoy Collins has appointed Dr. Stephen G. Gyland, Jr., Jacksonville, as a member of the Board of Social Welfare in District Number 6, Duval County.

Dr. James N. Patterson, Tampa, is Chairman of the Council of Clinical Chemistry of the American Society of Clinical Pathologists and Secretary of the Section of the Private Practice of Pathology of the College of American Pathologists. He was appointed a member of the Nominating Committee and a member of the Committee on Metabolic Patterns of the American Society of Clinical Pathologists.

New officers of the Florida West Coast Radiological Society are: Dr. James T. Shelden, Lakeland, President; Dr. Richard V. Meaney, Bradenton, Vice-President; and Dr. Joseph C. Rush, Clearwater, Secretary-Treasurer.

Dr. Sanford Cobb has been advanced from Assistant Professor of Anesthesiology at the University of Miami School of Medicine, and from Assistant Director of Anesthesiology at Jackson Memorial Hospital, to Associate Professor and Associate Director at the School and Hospital, respectively.

GEORGIA

The 1961 Annual Session of the Atlanta Graduate Medical Assembly, sponsored by the Fulton County Medical Society, will be held at the Atlanta Biltmore Hotel, February 19-22. One of the faculty members will be Dr. Fount Richardson, Fayetteville, Arkansas, First Vice-President of Southern Medical Association.

Dr. W. Loomis Pomeroy, Waycross, is the new President of the Georgia branch of the American College of Surgeons.

Dr. A. Frederick Bloodworth, Gainesville, was elected President of the Georgia Thoracic Society.

New members of the Medical Association of Georgia are Drs. Robert E. Arnall and Claude Frederick McCuiston, Atlanta; Drs. Prentiss E. Findlay, Robert Hamilton Groves, and Frank Dempsey Guillebeau, all of Albany; Drs. Ralph S. Buvinger and George Edward Tanner, Dublin; Drs. David H. Rozier and Gene McKenzie Kelly, Macon; Dr. James F. Brooks, Monroe; Dr. Augustus Baldwin Dudley, Jr., Columbus; Dr. Allen August Gleitz, Cairo; Dr. Lawrence Kendrick Lewis, Madison; Dr. Billy DuPont Luke, Blackshear; Dr. John Marvin Miller, Valdosta; Dr. Carvin C. Moreland, Logansville; Dr. Norman Brundage Pursley, Gracewood; Dr. Herbert Dean Smith, Mt. Vernon; Dr. Thomas Otis Sturkie, Augusta; and Dr. James Parham Taylor, Thomasville.

Dr. Joseph B. Mercer, Brunswick, has been elected President of the Georgia Academy of General Practice. Officers elected to serve with him are Dr. Charles E.

Continued on page 226

EDITORIAL

ECFMG

The Educational Council for Foreign Graduates has come under fire by some medical groups as well as in some of the lay press which is extremely unfortunate, since it represents to some extent a distortion of the facts and to some degree the selfishness on the part of certain physicians.

With the expansion of hospital beds because of increased construction of new hospitals and additions to old hospitals, the shortage of house-staff has been of growing acuity in the past decade. To meet this vacuum in house-officers there has been an increasing number of graduates of foreign medical schools entering the Country to fill the needs of the growing number of accredited hospitals. (Some 10,000 foreign graduates were in residence in this Country in 1959-60.) The great majority of our own graduates are currently being absorbed by the university hospitals of this Country and the more prominent of the non-university hospitals of our large cities. On the other hand, the United States is becoming the mecca for graduate training for physicians of the world, somewhat reminiscent of the days at the turn of the century when our graduates gravitated to the European countries for advanced training. America's contribution to world medicine is of exceeding significance and of inestimable importance in the "cold war." Physicians in most parts of the world, and particularly in many of the underdeveloped nations, stand high and are influential in political circles and in government. An indoctrination in American life and in American medicine stands us well in the making of friends in a turbulent world. Thus, the United States has much to offer to foreign medicine and is already in competition with communistic Russia in this sphere.

Nevertheless, it was obvious from the beginning of the acceptance of foreign graduates as house-officers that this was attended by certain problems, and actually possible hazards to our patients, because of the demonstrated educational deficiencies of some foreign graduates and particularly of the great difficulties in communication. Thus, when house-officers were left on their own responsibility, deficiencies in medical education might become manifest in inconsiderate and poor treatment of patients; the language barriers not infrequently resulted in the inability to understand and to carry out orders as given by attending physicians. (Almost every community can provide stories of mismanagement on these bases which would represent good grounds for suit, and the unquestionable loss of such a suit if it came to trial.)

Because of these obvious difficulties, in 1957, several agencies assumed the responsibility of setting standards for foreign trained physicians through certain qualifying tests. These agencies were the American Medical Association, the American Hospital Association, the Association of American Medical Colleges, and the Federation of the State Medical Boards. In July of 1958, all accredited hospitals were informed that "regardless of the date of appointment, it is expected that all graduates of foreign medical schools serving as interns or residents in U. S. hospitals as of July 1, 1960, will have been certified by the Educational Council for Foreign Medical Graduates." It furthermore developed that hospitals not abiding by this regulation would lose their accreditation as of Dec. 31, 1960, if unqualified foreigners were used in any way involving the care of patients. These qualifications were approved by the Immigration and Naturalization Service of the State Department, the agency which controls the temporary or student visa under the Exchange-Visitor Program as separate and distinct from permanent immigration. The examination includes testing the ability to use and understand the English language, and also medical knowledge as based on National Board Examinations. Passing these examinations with a score of 75% or better assures the foreign graduate of a "permanent certificate"; a score between 70 and 75 of a "temporary certificate" with the opportunity of being re-examined at a later date. During 1960 these examinations were given in this Country as well as in foreign countries. After 1960 examinations must be passed in the home country before student

visas will be issued for travel to the United States.

At the recent session of the A.M.A. held in Washington the delegations from several of the more populous seaboard states introduced resolutions which, though differing somewhat, would in essence have extended the period for training in this County for from a matter of months to several years irrespective of the fact that they had failed the ECFMG test. The topic was aired very thoroughly from all angles before a Committee on Resolutions which reported to the House of Delegates the recommendation that the A.M.A. plan stand with only slight modification, that in certain exceptional instances the foreign graduate might be kept on until he has had the opportunity to repeat the examination. Within this period, however, the graduate is not to have any responsibility for the patient or to work in a clinical area, and this time may be used in educating the foreign graduate in subjects which would permit his passing the examination.

Time magazine unfortunately implied criticism of the "powerful American Medical Association" making the passing of the test a qualification for internship and residency, going on to say that this then curtails their training as well as making them liable for deportation. It plays up the "loss of face" and embarrassment of the failed foreign graduate returning to his country a failure.

This is all well and good, but one must look at the other side of the ledger as well, and ask the question whether American medicine is doing itself proud in "the training of these foreign graduates" and to inquire further into what assistance we are giving to patient care in the foreign countries in question. The foreign graduate has been used all too frequently as a "pair of hands," to take histories and do physical examinations, thereby relieving busy practitioners of what they consider to be *onerous* aspects of the practice of medicine. Also, all too often the teaching program in the hospitals in which these foreign graduates intern or have residencies is an educational program in name only, and for as many foreign graduates as "lose face" by failing the examination there probably are an equal number who are returning to their homeland embittered by their experience of being used as "another pair of hands," and of even greater importance, disappointed by the brand of American medicine they may have witnessed or in which they have taken part. These foreign physicians then upon returning to their homeland may provide medical care commensurate with the poorer standards or levels of American medicine and not the highest. Thus, an unfortunate side effect of the training of the foreign graduate may be reflected as a black label on American medicine since the foreign graduate, particularly after several years in this Country, is likely to assume a rather high position as a *specialist* in his homeland. What type of specialist are we turning out in our graduate program? This is something for the leaders of American medicine to ponder! For the good of world medicine and the influence of American medicine on the teaching and practice of medicine throughout the world, the ECFMG will probably stimulate a greater proportion of the better students among foreign graduates to seek graduate education in this country, the poorer ones having been eliminated by the examinations. The hospitals which conduct so-called teaching programs will need to give them careful thought, since the better foreign graduate naturally selected by these examinations will, by virtue of his own intelligence and education, seek the better teaching hospitals in this Country.

This will come as a bitter pill to the doctors who wish "slave labor" to do the scut-work, in which is included history taking, *the most meticulous and rewarding aspect* of the patient's study—what a diagnostic instrument to leave in the hands of one poorly conversant with English! The thinking segment of the profession can see only good coming from the ECFMG examinations. The net result will be the entry on exchange-student visas of a more capable group of foreign graduates, at least reasonably well versed in English, who will profit by a graduate educational experience in American medicine, the more capable therefore of adding luster to American medicine and presenting it in its best light in the nations around the globe. These are the men and women who will raise the levels of medical education in the underdeveloped nations to provide health and aid in nutrition, the absence of which are the essence of unrest, revolt, and a turn to Communism. On our side

of the waters the ECFMG examinations will provide for safe and better care of our own patients and families wherever house-staff play a part in their care. Even if the hospitals with an inadequate educational program suffer a dearth of "slave labor" or "extra pair of hands," our own citizens should be safer if the American educated attending staff are forced to take their own histories, do their own preoperative physical examinations and give the intravenous fluids or transfusions than by a foreign graduate who may have received an M.D. degree, in some instances, from schools which are reminiscent of some of our medical schools of the first decade of this century.

The ECFMG examinations seem clearly to represent a much needed safeguard for American medicine from whichever way one looks at it, whether in world-wide prestige or influence in education, or in adequate medical care, not only abroad but at home.

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25 YEARS AGO

Patients with Staphylococcus Septicemia Receiving Bacteriophage Service.*

"The selection of the 100 patients for the present list has been made on the basis of objective criteria. First, there must have been received by us a request for bacteriophage service and therefore the series may be regarded as unselected. Second, there had to be reasonably convincing evidence that a blood stream infection with staphylococcus actually existed. In most instances there were repeated positive blood cultures and the organism was submitted to us for study. . . .

"Other possibilities require consideration. We see in this record a challenge to close scrutiny of the technical methods employed in the preparation of the bacteriophage filtrates used in treatment and we are inclined to believe that these agents may have been more suitable at certain particular times. The stock bacteriophage has not been standardized and every effort is still being made to increase its efficacy in the light of continued experience. . . .

"Of far greater significance, however are factors. . . . Among these may be mentioned age and sex of the patient, condition of the vital organs, such as heart, lungs, brain, kidneys, at the start of bacteriophage treatment, susceptibility of the infecting organism to bacteriophage lysis, virulence of the infection, delay in instituting treatment and wisdom exercised in carrying out the treatment.

"As to distribution according to sex and age, there were 42 females and 58 males, an apparently insignificant difference. One boy was 15 days old and another 3 months old; 1 woman was 80 years old. . . .

"Susceptibility of the Staphylococcus to the Available Bacteriophages. In most instances the staphylococcus of sufficient virulence to invade the blood stream is found to be susceptible to lysis by our stock staphylococcus bacteriophage. . . . In 20 cases of the series we failed to receive a culture of the infecting organism in spite of repeated requests. In 74 cases the culture from the patient was found completely susceptible to our stock staphylococcus bacteriophage in the first trial. In general we have the impression that the staphylococcus resistant to bacteriophage is of relatively lower virulence than the phage-susceptible strains, but further observations are required before an unreserved statement can be made in regard to this point. . . .

"Comment. The appraisal of a therapeutic agent on the basis of clinical experience is beset with difficulty. The human material is lacking in uniformity. One takes the patients as they come. It has been suggested that alternate patients might be observed as controls, intentionally omitting the use of bacteriophage. Such a program would require a control of the clinical material which we have lacked. Furthermore, we should be loath to attempt such a control series even if the clinical material were available under our control. . . .

"Brief notes are presented on 100 cases, No. 16 to No. 115 in our series of staphylococcus bacteremias receiving our bacteriophage service. Of these patients 75 died and 25 survived. This is a much better percentage than is found in published reports of this condition.

"Staphylococcus infection of the blood stream is definitely influenced by the intravenous administration of potent bacteriophage and when wisely employed the bacteriophage is helpful, sometimes even life-saving in the treatment of these patients."

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*MacNeal, W. J., and Frisbee, F. C.: One Hundred Patients with Staphylococcus Septicemia Receiving Bacteriophage Service, Am. J. M. Sc. 191:179, 1936.

Constitution and Bylaws*
Southern Medical Association

CONSTITUTION

ARTICLE 1—NAME

The name and title of this organization shall be the SOUTHERN MEDICAL ASSOCIATION (a nonprofit organization) chartered under the laws of the State of Alabama, and its domicile shall be in Birmingham, Alabama.

ARTICLE 2—PURPOSE

The exclusive purpose of this Association shall be to develop and foster scientific medicine. It shall have no direct connection with or control over any other society or organization, nor shall it at any time be controlled by any other society or organization. All meetings of the Association shall be for the sole purpose of reading and discussing papers pertaining to the science of medicine, to public health and to medical education. The Association shall not at any time take active part in any economic, political or sectarian questions, or concerted movements for securing legislative enactments.

ARTICLE 3—MEMBERSHIP

Section 1. *Members.* The membership of this Association shall be limited to the white members of the various state and local medical societies of the following states, viz.: Alabama, Arkansas, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia; to white medical officers of the United States Army, Navy, Public Health Service and Veterans' Bureau on active duty and to white American members of the Canal Zone Medical Association and the Puerto Rico Medical Association.

Section 2. *Honorary Members.* An active member of this Association who has been a member for a period of not less than ten consecutive years and who is an honorary member of his component society and of his constituent association, or who by reason of ill health or physical disability or who because of eminence attained in the profession, may at the discretion of the Council be recommended for honorary membership. Such honorary members shall have all the rights and privileges of membership except that they may not hold office nor shall they be required to pay dues.

Section 3. *Associate Members.* The Association may have five classes of associate members: (1) a member who has moved from the territory of the Southern Medical Association, (2) a physician from outside of the territory of the Southern Medical Association, (3) an intern or resident not yet a member of a state or local medical society, (4) an individual not holding a degree of Doctor of Medicine but who is on the teaching staff of a medical school or engaged in research, practice or promotion of a science allied to medicine and holding a degree in a subject commonly referred to as a basic science, and (5) a layman who has rendered meritorious service to the medical profession or to humanity. To be eligible for associate membership under Classes 2, 3, and 4, a person must satisfy the requirements as set forth in Section 1 except for holding membership in state and local societies in the case of Classes 3 and 4. Associate members under Classes 4 and 5 shall be recommended for membership by the Council. Under Classes 1, 2, and 3, individuals may be accepted for associate membership by the Association office after their eligibility under the provisions of this Section has been determined. Associate members shall not hold office nor be entitled to vote. Associate members under Classes 1, 2, and 4 shall pay the regular annual dues and shall receive the *Southern Medical Journal*, although, by action of the Council, dues and *Journal* privileges may be waived for good cause in Class 1. Associate members under Classes 3 and 5 shall not pay dues nor receive the *Journal* unless by personal subscription.

ARTICLE 4—SCIENTIFIC WORK

The scientific work of this Association shall be divided into twenty sections: Section on General Practice, Section on Medicine, Section on Gastroenterology, Section on Neurology and Psychiatry, Section on Pediatrics, Section on Pathology, Section on Radiology, Section on Dermatology and Syphilology, Section on Allergy, Section on Physical Medicine and Rehabilitation, Section on Industrial Medicine and Surgery, Section on Surgery, Section on Orthopedic and Traumatic Surgery, Section on Gynecology, Section on Obstetrics, Section on Urology, Section on Proctology, Section on Ophthalmology and Otolaryngology, Section on Anesthesiology, and Section on Public Health; and such other sections as the Association may from time to time create or provide for.

ARTICLE 5—ANNUAL MEETING

Section 1. The Association shall hold an annual meeting during which there shall be not less than two general sessions, one of which may be devoted to the business of the Association and restricted exclusively to the membership when so determined by the Council or by the Executive Committee or upon a petition filed by not less than twenty-five members of the Association. All expenses of the annual meeting shall be borne by the Association.

Section 2. The time and place for holding each annual meeting shall be fixed by the Council.

Section 3. Persons of distinguished scientific attainments, not members of this Association, may become guests during any annual session, and shall be accorded the privilege of participating in all of the discussion. The privilege of the floor cannot be otherwise extended except by unanimous affirmative vote of the members present.

ARTICLE 6—OFFICERS

Section 1. The officers of the Association shall be a President, President-Elect, First Vice-President, Second Vice-President, a Board of Trustees, and a Council composed of one member from each state or district of the Association. An Executive Secretary, a Business Manager, a Treasurer, and an Editor of the *Journal*, shall be selected by and with the consent of the Council, with salaries and tenure of office to be determined by the Council.

Section 2. All elective officers of the Association except the Trustees and Councilors shall be elected annually at the last general session.

Section 3. The Councilors shall be appointed by the President, one from each of the states enumerated in Article 3, Section 1, and shall serve for five years, and shall not be eligible for reappointment, the Councilor terms expiring with the close of annual meetings. This Section shall become effective as of 1933, the Councilor terms to expire as follows: 1933, Louisiana, Mississippi, Oklahoma; 1934, Arkansas, Georgia, District of Columbia; 1935, Florida, South Carolina, Virginia, Texas; 1936, Maryland, Missouri, North Carolina; 1937, Alabama, Tennessee, West Virginia, Kentucky.

Section 4. The Trustees shall be six in number and shall be elected by the Council, one each year, to serve for a period of six years. The oldest member in point of service shall be the Chairman.

ARTICLE 7—SECTION OFFICERS

The officers of each Section shall consist of a Chairman, Vice-Chairman and Secretary, and when so desired by the Section, a Chairman-Elect as an additional officer or in place of the Vice-Chairman, elected annually by the members of the respective Sections. Each section is encouraged to designate an Executive Committee or Advisory Committee, preferably made up of current officers and immediate past Chairmen, to aid in planning the work of the Section, evaluating papers for possible publication, and serving as a Nominating Committee when requested. The Chairmen and Secretaries of all Sections may be invited to meet with the President and the members of the Committee on Scientific Work immediately preceding or during each annual meeting. The Secretaries or representatives of all Sections may be invited to meet with the Committee on Scientific Work each winter, near February 1st.

ARTICLE 8—SEAL

The Association shall have a common seal, with power to break, change or renew the same at pleasure.

ARTICLE 9—AMENDMENTS

The Association may at any annual meeting amend any article of this Constitution by a two-thirds affirmative vote of the members present and voting at a general session of that meeting, provided the amendment has been presented in writing and laid on the table at the previous annual meeting.

*January 1, 1961

BYLAWS

CHAPTER 1—MEMBERSHIP

Section 1. Any member who is under sentence of suspension or expulsion from his state or local society shall automatically forfeit his membership in this Association.

Section 2. Each member in attendance at the annual meeting shall register and shall receive a badge, which shall be evidence of his right to all the privileges of membership at that meeting. No member shall take part in any of the proceedings of an annual meeting until he has complied with the provisions of this Section.

Section 3. The Association may at any annual meeting on recommendation of Council suspend or expel any member of the Association by a majority vote of those present at the last general session of that meeting.

Section 4. Application for membership in this Association shall be made in writing.

Section 5. The Association reserves the right to accept or reject any application for membership.

CHAPTER 2—GENERAL SESSIONS

Section 1. The general sessions shall include all registered members and eligible guests who shall have equal rights to participate in the proceedings and discussion and, except guests, to vote on prevailing questions. Each session shall be presided over by the President, or, in his absence or inability or by his request, by the First or Second Vice-President. Two or more general sessions may be held at each annual meeting. One of these, which may be at a luncheon on the first or second day of the annual meeting, may be utilized as a business meeting at which pertinent business affairs of the Association, such as proposed amendments to the Constitution and Bylaws, may be presented and discussed. Another general session shall be held on the third evening, at which time the President's address, other addresses, the report of the Council, announcement of special awards, election of new officers and installation of the new President, will make up the order of business.

Section 2. The President shall have authority to create commissions or committees for scientific investigations of special interest and importance to the profession and the public. He should receive and dispose of these reports in the proper channels. Any expenses incurred in such an operation must be approved by the Executive Committee.

Section 3. Except by special order, the order of exercise, papers and discussions as set forth in the official program shall be followed from day to day until it has been completed, and all papers omitted will be recalled in regular order.

Section 4. No address or paper before the Association, or any of its Sections, except the address of the President, the Section Guest Speakers, and other speakers on special programs or symposia, shall exceed fifteen minutes in presentation. The opening discussion shall be limited to five minutes and succeeding discussions shall not exceed three minutes each. No member or guest may discuss any paper more than one time. The closing discussion is not to exceed five minutes.

Section 5. All papers read before the Association or any of its Sections shall be the property of the Association. Each paper shall be deposited with the Secretary of the Section when read. The officers of each Section, preferably the Executive or Advisory Committee of each Section, shall evaluate for the Editor all papers in regard to timeliness of publication.

CHAPTER 3—ELECTION OF OFFICERS

Section 1. All elections shall be made by the type of ballot (secret, voice, or raising of hands) as the majority of those members present may desire. A majority of the votes shall be necessary for election. If no one receives a majority of the votes cast the member receiving the smallest number of votes shall be dropped and the balloting shall be repeated.

Section 2. The report of the Council and the Executive Committee of this Association shall be presented at the last general session.

Section 3. There shall be a Selection Committee of the Council consisting of five members from the Council appointed by the Chairman of the Council and announced at the midwinter meeting of the Executive Committee. One member shall represent each class with the oldest member in point of service acting as Chairman. It shall be the duty of this Committee to seek, receive and consider names for all elective offices. After due consideration, a list of nominees shall be submitted to the Council for nomination as prescribed already in the Constitution and Bylaws. The submission of such a list does not preclude nominations from the floor. The results of these nominations along with the report of the Council and the election of officers shall be submitted to the general membership as the final order of business at the last general session.

Section 4. Each Section shall elect its own officers at a regular session of the Section and shall notify the Executive Secretary of the full list of officers for the ensuing year.

CHAPTER 4—DUTIES OF OFFICERS

Section 1. The President shall preside at all general sessions of the annual meetings and all functions at which the Association is host. He shall appoint all committees not otherwise arranged for, and may deliver an annual address at the general session to be held at a time and place decided upon by the Executive Committee. In meetings of the Council or the Executive Committee, he shall cast a deciding vote in case of a tie. He shall perform such other duties as the definition of his office requires. The program for the general scientific sessions shall be formulated by the Committee on Scientific Work in consultation with the President and the Executive Committee.

Section 2. The First Vice-President shall assist the President in the discharge of his duties and in the event of his death, resignation, or removal, shall succeed him. He shall also perform such other duties as may be assigned to him under the Constitution and Bylaws.

Section 3. The Second Vice-President shall be a member of the Committee on Meeting Places and shall keep himself informed on the Constitution and Bylaws of the Association. He should be ready, on call of the President, to serve on committees or serve in any other capacity as designated by the President. He should assume the office of First Vice-President in case of vacancy of this office.

Section 4. The Executive Secretary shall be the chief administrative officer of the Association. His special area of responsibility shall be: (a) Supervision of Employees—He shall employ and direct all staff personnel (full and part-time) including the assignment of duties of such employees except the staff employees under the direct supervision of the Business Manager, the Editor, and other administrative officers. (b) Promotion and Records—With the cooperation of the Council and all other officers, he shall seek at all times to expand the membership and interests of the Association. He shall keep, or cause to be kept, the official minutes of the transactions of the Association as the Council may direct, and not otherwise provided. He shall conduct the official correspondence and shall be the custodian of all official records and papers of the Association. (c) Director of Finance and Budgetary Control—As chief finance officer of the Association, he shall receive all funds, including bequests and donations, and deposit the same to the credit of the Treasurer or to other officially designated Funds or Accounts. He shall direct the general bookkeeping and accounting system and shall render an annual financial report to the Council. He shall prepare and recommend an annual budget to the Council. Said budget, when amended and adopted by the Council, shall determine the expenditure of funds during the ensuing fiscal year, and shall not be amended without the approval of the Council. All expenses of the Association shall be paid by check signed by the Executive Secretary or Business Manager, either as the original signature, or as a counter-signature as directed by the Council. He shall secure an annual audit of the books of account by a certified public accountant, approved by the Council, which audit report shall be transmitted to the Council as a part of his financial report. He shall be bonded in favor of the Association in an amount determined by the Council, with the premium cost of such bond to be paid by the Association. (d) Managing Editor of the *Journal*—He shall act as Managing Editor of the *Southern Medical Journal* and other publications of the Association. (e) Delegation of Authority—He may delegate to the Business Manager, by and with his consent, or to staff personnel any portions of the above responsibilities.

Section 5. The Business Manager shall be responsible directly to the Council, with the understanding that at all times his work shall be co-ordinated with that of the Executive Secretary. He with the Executive Secretary shall plan and direct all activities

related to the production of revenue for the Association. His special areas of responsibility shall be: (a) Business Management of the *Journal* and other Publications—He shall have active direction of the business affairs of the *Journal* including (1) establishing and maintaining advertising policies, subject to the prior approval of the Editor or any committee or agency so designated by the Council, (2) securing advertising, (3) executing and enforcing contracts for printing, and supervising production of the *Journal*. (b) Director of Technical Exhibits—He shall plan and direct the technical exhibits for the annual sessions in accordance with basic policy established by the Council or Executive Committee. (c) Physical Facilities for Annual Sessions—He shall secure necessary facilities for holding the annual sessions; executing necessary contracts and agreements for proper and adequate space, and shall advise the Executive Secretary and the Council with respect to the availability of adequate facilities for the annual sessions within the territory. (d) Supervision of Employees—He shall employ and direct the full and part-time staff personnel under his immediate supervision. (e) Director of Scientific Exhibits—He shall plan and direct the scientific exhibits for the annual sessions. All proposed exhibits shall be approved by the Editor or such other committee or agency designated by the Council in order to secure professional and educational evaluation prior to the sessions. (f) Acceptance of Other Responsibility—At the request of the Executive Secretary, and/or Council, he shall take responsibility for other personnel and duties.

Section 6. The offices of Executive Secretary and Treasurer, or of Business Manager and Treasurer may be combined and vested in the same person at the discretion of the Council. If the offices be separate, the Treasurer shall be elected by the Council which shall determine his compensation and tenure of office. He shall give bond in an amount determined by the Council, with the premium of said bond to be paid by the Association. He shall receive all funds from the Executive Secretary and deposit the same in a bank or banks located in the domicile of the Association. Such depositories shall be designated by and with the consent of the Council. He shall sign all checks drawn on the Association for sums provided for in the annual budget.

Section 7. The Council, at its discretion, may elect an Advisor and Professional Relations Counselor to actively serve the Association under the direction of the Council. His compensation, tenure of office, and specific responsibilities shall be determined by the Council. Proper and adequate budgetary allowances shall be made in the regular budget submitted annually to the Council for adoption, said allowances to include salaries, rent, travel expense, supplies and other reasonable expenses incident to the performance of his duties as designated by the Council. He shall submit an annual report of his activities to the Council.

Section 8. The Editor. (a) He shall be responsible for the non-advertising portion of the *Journal*, including (1) the preparation of editorials, (2) the selection and editing of scientific articles, (3) the sectional content, and (4) the general format with approval of the Executive Secretary and Business Manager. (b) He may appoint, by and with the consent of the Council, assistant or associate editors and/or an Editorial Board. (c) He will review, or cause to be reviewed, any books which in his discretion merit the publication of a review in the *Journal*. (d) By and with the consent of the Executive Secretary (acting as Managing Editor), he shall establish practical mechanics for handling manuscripts and other materials for publication. (e) He may, with the consent of the Council, employ necessary secretarial assistance.

CHAPTER 5—Council

Section 1. The Council shall hold sessions as seem necessary during or immediately preceding the annual meeting of the Association, and at such other time as necessity may require, subject to the call of the Chairman or on petition of three Councilors. It shall hold a session on the first day of the annual meeting of the Association. At each annual meeting a Chairman for the succeeding year shall be elected. It shall, through its Chairman, make an annual report to the Association at such time as may be provided for.

Section 2. Collectively, the Council shall be the Governing Body of the Association. It shall have jurisdiction over all questions involving the rights and standings of members, whether in relation to other members or to this Association. All matters brought before the general sessions or Sections shall be referred to the Council for consideration.

Section 3. In the event of any regularly appointed Councilor being unable to attend the annual meeting, the Chairman of the Council shall appoint an alternate to serve for that meeting.

Section 4. The Council shall constitute the Nominating Committee for all elective offices except the Section Officers and shall report the results of its deliberations to the last general session. It shall include nominations for such offices as are to be filled at that annual meeting. Members of the Council are not eligible to any of the offices nominated by them. Nothing in this section shall be construed as preventing additional nominations being made on the floor by members of the Association.

Section 5. There shall be an Executive Committee of the Council to represent the Association and Council between the annual meetings to consider special matters as would come before the Council and report their findings and conclusions to the Council. Any matters of such urgency that they should not wait over until the annual meeting are to be presented to the Council in the most effective means and a vote taken on their recommendations by the most expeditious means. A majority of replies received within ten days will determine the action of the Council. The Executive Committee shall consist of seven members: the Chairman of the Council, the Vice-Chairman of the Council, three other members of the Council elected annually by the Council, the President of the Association and the President-Elect. The Chairman of the Council shall serve as Chairman of the Executive Committee. In event of the absence of a Council member of this Executive Committee, an alternate may be appointed by the Chairman to meet during the respective session, with full power of the absent member. The Executive Committee may meet as often and at such places as the Chairman or four members of the Executive Committee may decide, except that one meeting each year must be held at the home office in Birmingham. This committee will be the Advisory Committee to the Woman's Auxiliary. All expenses of this Committee attending meetings other than the annual meetings shall be borne by the Association. The Executive Committee shall serve as a Finance Committee to work with the Executive Secretary in budget studies, and in supervising the carrying out of the annual budget; and shall consider all unappropriated or unbudgeted expenses before such items are considered by the Council.

Section 6. There should be appointed annually by the President on nominations by the respective Councilor a Councilor Committee composed of five Associate Councilors from each state or district with the respective Councilor as Chairman. Such Councilor Committee shall stimulate interest in all activities of the Southern Medical Association.

CHAPTER 6—Duty of Trustees

Section 1. The legal title to all property of the Association shall vest in the Trustees and their successors in office. They shall execute all deeds of conveyance of property, both real and personal, when authorized to do so by the Council. Any action authorized to be done by the Trustees within the limitations of this section shall be binding if done by a majority thereof.

CHAPTER 7—Committees

Section 1. The standing committees of the Association shall be: (a) Committee on Meeting Arrangements, (b) Committee on Publications, (c) Committee on Scientific Exhibits, (d) Committee on Scientific Exhibit Awards, (e) Committee on Constitution and Bylaws, (f) Committee on Employees' Pension Trust, (g) Committee on Finance, (h) Committee on History, (i) Committee on Insurance, (j) Committee on Journal Advertising, (k) Committee on Medical Students, (l) Committee on Meeting Places, (m) Committee on Personnel, (n) Committee on Nominations, (o) Committee on Scientific Work, (p) Committee on Scientific Exhibits Promotion.

Section 2. The duties of the standing committees of the Association are as follows:

2*a*. The Committee on Meeting Arrangements shall be appointed by the President after consultation with the President of the Host Society and the Executive Secretary of the Association. Monthly progress reports shall be given to the President and the Chairman of the Council each month relative to the arrangements made for the annual meeting.

2*b*. The Committee on Publications shall consist of the Editor of the *Journal*, the Executive Secretary of the Association, and two members appointed from the Council. This Committee is an

advisory committee to the Editor of the *Journal* and should function on call of the Editor to pass on any matters relative to publication which he deems necessary.

2*c*. The Committee on Scientific Exhibits is appointed by the Chairman of the Council to review applications for scientific exhibits and to encourage the presentation of interesting exhibits by members of the Association and other scientists.

2*d*. The Chairman of the Council shall appoint a confidential Committee on Scientific Exhibit Awards for all scientific exhibits. This Committee shall be composed of five members, one of whom shall represent pathology, one medicine, one surgery, and two at large. At least one member of this Committee shall be a member of the Council and shall serve as Chairman. The following standards may be followed in making awards: (1) originality, (2) practicability, (3) applicability to practice of medicine, (4) quality, (5) teaching value, (6) quantity, and (7) personal demonstration.

2*e*. The Committee on Constitution and Bylaws shall be appointed by the Chairman of the Council. This Committee should consist of five members, three of which should be active Councilors. The senior class member shall act as Chairman. It will be the duty of this Committee to periodically review the Constitution and Bylaws, to receive suggestions from members of the Association relative to any changes which should be made, and to bring the suggested changes before the Council for approval.

2*f*. The Committee on the Employees' Pension Trust should be appointed by the Chairman of the Council. The constitution and duties of this Committee will be as described in the Employees' Pension Trust agreement.

2*g*. The Committee on Finance shall be the Executive Committee. It will be responsible for periodically reviewing the financial structure of the organization, preparing the annual budget and reporting at regular intervals to the Council.

2*h*. The Committee on History of the Southern Medical Association shall be appointed by the Chairman of the Council. It will be the duty of this Committee to add to the existing history, items of interest relative to the accomplishments of members of the Association or such other items of interest as it deems necessary.

2*i*. The Committee on Insurance shall be appointed by the Chairman of the Council. It shall be the duty of this Committee to periodically review the insurance program of the Association and to work in liaison with the agent or carrier, to insure the success of the program and to see that member subscribers are adequately protected.

2*j*. The Committee on Journal Advertising shall be appointed by the Chairman of the Council. It shall consist of the Business Manager of the Association, the Editor of the *Journal*, and three members of the Council. It shall be the duty of this Committee to review the items advertised in the *Journal* and to reject any items of questionable merit.

2*k*. The Committee on Medical Students shall be appointed by the Chairman of the Council. It shall be the duty of this Committee to issue invitations to the various medical schools selected to send senior medical students to the annual meetings, to make arrangements for travel and housing of these students and to provide for an interesting program for them.

2*l*. The Committee on Meeting Places shall be appointed annually by the Chairman of the Council. It shall be the duty of this Committee to review the invitations which have been submitted for annual meetings and to report to the Council. In liaison with the Business Manager and Executive Secretary, arrangements should be made for meeting places for the annual meeting at least five years in advance.

2*m*. The Committee on Personnel shall be appointed by the Chairman of the Council at each annual meeting. At least one member of this Committee should reside in the area of the home office. It shall be the duty of this Committee to work in liaison with the Business Manager and the Executive Secretary in periodically reviewing any problems which arise relative to personnel employed by the organization.

2*n*. The Committee on Nominations shall be appointed by the Chairman of the Council at each annual meeting and be announced at the winter meeting of the Executive Committee. All members of this Committee shall be Councilors and one member shall represent each class with the oldest member in point of service acting as Chairman. It shall be the duty of this Committee to seek, receive, and consider names for all elective offices. A list of nominees shall be submitted to the Council as prescribed in the Constitution. The submission of such a list does not preclude nominations from the floor. The results of these nominations together with the report of the Council and elected officers shall be submitted to the general membership as the final order of business at the last general session.

2*o*. The Committee on Scientific Work shall be appointed by the Chairman of the Council to act in an advisory capacity to the Section Officers in the formulation of the program and in carrying out the policies of the Association in regards to scientific programs.

2*p*. The Committee on Scientific Exhibits Promotion should be appointed annually by the Chairman of the Council. It should be the duty of this Committee to solicit exhibits of merit from the various medical schools and from physicians at large for presentation at the annual meeting.

Section 3. *Ad hoc* committees, or such other committees as deemed necessary by the President or Chairman of the Council, may be appointed by the President or the Chairman of the Council as the necessity arises.

Section 4. A confidential committee of at least five members with the First Vice-President as Chairman to be known as the Committee on Special Awards, shall be appointed by the President to evaluate the scientific contributions of the various candidates for special awards. If suitable candidates are selected by the Committee, it shall submit the names of not more than three such members to the Council for each award. The Council may elect one for each respective award, which will be publicly presented at the last general session of that meeting.

CHAPTER 8—AWARDS

Section 1. There shall be a Distinguished Service Award of the Association which may be awarded annually to any member in recognition of outstanding contributions to the advancement of medical science. Any member of the Association shall be eligible to receive the award and nominations may be made by any member of the Association.

Section 2. There shall be a Research Medal which may be awarded from time to time to a member of the Southern Medical Association for meritorious and original research work provided the member has made contributions to medical science of sufficient importance to merit this distinction.

Section 3. There shall be a Seale Harris Medal which may be awarded to some member of the Association as recognition for important research accomplishment in the broad field of metabolism, endocrinology, nutrition, or for research which contributes to a better understanding of the chemical changes occurring in disease.

Section 4. Award for original research to be known as the "Southern Medical Association Award for Original Research in Medicine." This award will consist of three prizes and three certificates to be given for original research in clinical medicine or the basic sciences as applied to medicine. The first prize will be $500.00 and the winner of this award will be required to present the prize winning essay at the annual meeting of the Association in the same year that the prize is won. The essay will be read in the Sectional meeting to which it applies. The winner of the award will have all expenses incident to the meeting paid by the Association. The second prize will be $300.00, and the winner of this award will also be expected to present his paper at the annual meeting in the same year in which the prize is given, but his expenses will not be defrayed by the Association. The third prize will be $100.00.

The recipient of any of these awards must either be a member or an associate member of the Association in one of the member states. The prime purpose of this award is to stimulate original research and to recognize the investigative efforts of the physicians in the Southern States.

Announcements of this proposed award will be published in the official publications of the Association, and the deans of the medical schools in the member states will be mailed suitable notices for posting on bulletin boards.

The essays will be mailed to the President with

a code number on the paper and the name of the candidate in a sealed envelope. These essays will be given by the President to a confidential committee for critical review and selection of the winners. The Committee should be instructed that it is not necessary to have a prize winner each year and that the award is not to be given unless it is merited.

The essays when mailed to the President must be accompanied by a photograph and curriculum vitae for possible publication.

CHAPTER 9—DUES

Section 1. Effective as of January 1, 1951, as per action of the Association on November 14, 1950, the dues of this Association shall be $10.00 per year, payable annually in advance, membership to begin on date of application.

Section 2. Any member whose dues shall remain unpaid for six months shall be automatically suspended at the end of six months, provided that on full payment of his arrearage he shall be automatically reinstated as a member in good standing from the date of reinstatement.

CHAPTER 10—FISCAL YEAR

The fiscal year shall be October 1 to September 30, but all salary provisions should become effective December 1, of each year.

CHAPTER 11—RULES OF ORDER

The deliberations of this Association shall be governed by parliamentary usage, as contained in Roberts' "Rules of Order."

CHAPTER 12—AMENDMENTS

These Bylaws may be amended at any annual meeting by a two-thirds affirmative vote of the members present and voting at a general session of that meeting after the amendment has been presented in writing and laid on the table for one day.

RESOLUTION

The Section on Ophthalmology and Otolaryngology has adopted the following resolution on the death of Dr. Edmund W. Rucker, Jr.

On August 7, 1960, the Southern Medical Association lost one of its greatest men. Dr. Edmund W. Rucker, Jr., became a member of the Association in 1916, just ten years after its founding. The opportunity for friendships and scientific progress in his specialty among Southern doctors appealed to him greatly. He was the first Alabama physician who limited his practice to otolaryngology; he was certified a Diplomate of the American Board of Otolaryngology at the first meeting of this founding group in 1927; and another of his many distinctions was that he was the first Fellow of the American College of Surgeons in Alabama.

Dr. Rucker often reminded us all that Southern physicians were so busy treating so many patients that they did not write for the medical journals as often as doctors in other sections of the country, who had fewer patients, were doing. He thought the *Southern Medical Journal* was an excellent medium for rapid and wide dissemination of newer discoveries and technics. He made the Section of Ophthalmology and Otolaryngology of the Southern Medical Association a forum for papers for Southerners, and constantly recommended outstanding men for participation in the annual meetings.

From 1938 to 1942 he served as the Councilor for the Association from Alabama, and before and after this time, influenced greatly the affairs of the Association. In 1953, over his own formidable protest he was elected Chairman of the Section. He resisted this because he thought someone might believe that he had selfishly used his position on the Nominating Committee. He was acclaimed Chairman by members of the Section who loved him so much that they insisted that he remain on the Nominating Committee at the same time!

Mrs. Edmund Rucker, who survives him, was the former Miss Lillian Hill, sister of Senator Lister Hill, and daughter of the illustrious Dr. L. L. Hill of Montgomery.

Dr. and Mrs. Rucker attended thirty-four out of a possible thirty-six annual meetings and they were the hub around which the professional and social friendships of the eye, ear, nose and throat men and their wives rotated.

Dr. Rucker was alert and vigorous until he died in his sleep, the method of departure for which he often expressed preference. He maintained an intense interest in the affairs of the Section, arguing passionately against dividing the Section into an Eye; and an Ear, Nose and Throat Group.

Firm and fair in his judgments, fearless in expressing his opinions, impeccable in ethical relationships, devoted to his friends, wise in his knowledge, admired and beloved by all, he is and will always be sorely missed.

Be it resolved that this be entered in the records of the Section of Ophthalmology and Otolaryngology and that a copy with the condolences of the Section and of the Association be sent to his widow, Mrs. Lillian Rucker.

GEORGE M. HAIK, M.D.
Chairman
ALBERT C. ESPOSITO, M.D.
Secretary
ALSTON CALLAHAN, M.D.
Resolutions Committee

BOOKS RECEIVED

Protein and Amino Acid Requirements in Early Life. By L. Emmett Holt, Jr., M.D., New York University; Paul Gyorgy, M.D., University of Pennsylvania; Edward L. Pratt, M.D., University of Texas; Welma E. Snyderman, M.D., New York University; and William M. Wallace, M.D., Western Reserve University. 63 pages. New York: New York University Press, 1960. Price $1.00.

Adventure to Motherhood. By J. Allan Offen, M.D., Assistant Professor of Obstetrics and Gynecology, University of Miami School of Medicine. New York: Taplinger Publishing Co., Inc., 1960. Price $2.95.

Clinics in Electrocardiography. By Dale Groom, M.D., Assistant Professor of Medicine, Medical College of South Carolina, Charleston. 152 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $8.00.

Congenital Malformations of the Heart, Volume 1. General Considerations. By Helen B. Taussig, M.D., Professor of Pediatrics, Johns Hopkins University School of Medicine. Second Edition. 197 pages. Cambridge, Mass.: Harvard University Press, 1960. Price $4.75.

Hypnosis in Skin and Allergic Diseases. By Michael J. Scott, M.D., Instructor in Medicine, University of Washington School of Medicine. 147 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $6.50.

Radiation Therapy of Early Prostatic Cancer. By R. H. Flocks, M.D., and D. A. Culp, M.D., State University of Iowa, Department of Urology. American Lecture Series. 73 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $4.50.

Differential Diagnosis of Yaws. By C. J. Hackett, M.D., World Health Organization, Geneva, and L. J. A. Loewenthal, M.D., M.R.C.P., D.T.M.&H., Dermatologist, General Hospital, Johannesburg, South Africa. World Health Organizational Monograph Series No. 45. 88 pages. New York: Columbia University Press, 1960. Price $3.25.

Hypothermia for the Neurosurgical Patient. By Antonio Boba, M.D., Associate Professor of Anesthesiology, The Albany Medical College of Union University. 122 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $6.00.

Diabetes Mellitus. A Clinical and Pathological Study of 2,529 Cases. By E. T. Bell, M.D., Emeritus Professor of Pathology, University of Minnesota. American Lecture Series. 66 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $3.75.

Lumbar Discography and Low Back Pain. By Donald DeForest Bauer, M.D., Oregon Technical Institute, Associate Supervisor and Radiologist, Department of Medical X-ray Technology. 88 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $5.00.

Modern Occupational Medicine. Edited by A. J. Fleming, M.D., Medical Director, E.I. duPont de Nemours & Co., and C. A. D'Alonzo, M.D., Assistant Medical Director, same company. Second Edition. 553 pages. Philadelphia: Lea & Febiger, 1960. Price $12.00.

Dietary Proteins in Health and Disease. By James B. Allison, Ph.D., Director, Bureau of Biological Research, Rutgers, The State University, N. J.; and William H. Fitzpatrick, Ph.D., Honorary Associate Research Specialist, Bureau of Biological Research, Rutgers. American Lecture Series. 86 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $4.50.

Procedures in Vascular Surgery. By Richard Warren, M.D., Clinical Professor of Surgery, Harvard Medical School. 211 pages. Boston: Little, Brown & Company, 1960. Price $12.50.

The Surgeon's Glove. By Justine Randers-Pehrson, M.A. 95 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $4.50.

Occupational Therapy in Rehabilitation. Edited by E. M. MacDonald, B.Litt., T.M.A.O.T., and others. 341 pages. Baltimore: Williams & Wilkins Company, 1960. Price $8.50.

Resuscitation of the Newborn Infant. By Harold Abramson, M.D., Professor of Clinical Pediatrics, New York Medical College, New York, N. Y. 274 pages. The C. V. Mosby Company, 1960. Price $10.00.

Infectious Diseases of Children. By Saul Krugman, M.D., Professor and Chairman, Department of Pediatrics, New York University School of Medicine; and Robert Ward, M.D., Professor and Head, Department of Pediatrics, University of Southern California School of Medicine, Los Angeles. Second Edition. 387 pages. St. Louis: C. V. Mosby Company, 1960. Price $13.00.

Meaning and Methods of Diagnosis in Clinical Psychiatry. By Thomas A. Loftus, M.D., Associate Professor of Clinical Psychiatry, The Jefferson Medical College, Philadelphia. 160 pages. Philadelphia: Lea & Febiger, 1960. Price $5.00.

Clinical Applications of Cardiopulmonary Physiology. By M. Henry Williams, Jr., M.D., Associate Professor of Medicine and Physiology, Albert Einstein College of Medicine, N. Y. 225 pages. New York: Paul B. Hoeber, Inc., 1960. Price $7.50.

The Surgical Treatment of Portal Hypertension Bleeding Esophageal Varices and Ascites. By M. Judson Mackby, M.D., Staff Surgeon, Kaiser Foundation Hospital, San Francisco. 250 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $10.50.

The Torch. By Wilder Penfield. 367 pages. Boston: Little, Brown & Company, 1960. Price $4.75.

Shaw's Textbook of Operative Gynecology. Revised by John Howkins, M.D., M.S. (London), F.R.C.S. (Eng.), F.R.C.O.G., Obstetrical and Gynaecological Surgeon, St. Bartholomew's Hospital, London. Second Edition. 477 pages. Baltimore: Williams & Wilkins Company, 1960. Price $20.00.

The Case Reports and Autopsy Records of Ambroise Pare. Compiled and Edited by Wallace B. Hamby, M.D., Department of Neurological Surgery, Cleveland Clinic, Ohio. 193 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $6.50.

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Exclusive Publication: Articles offered for publication must be contributed solely to the Southern Medical Journal.

Manuscripts: Manuscripts should be original copy, typewritten, double-spaced, with wide margins. Because of lack of space, it is necessary to limit the number of bibliographic references to twenty. Footnotes and references should conform to the following style:

1. Doe, J. E.: What You Should Know about It, South. M. J. 50:711, 1950.

Illustrations: Black and white glossy prints, preferably 5 by 7 inches, and drawings in India ink on white paper are required. The author's name, number and indication of top, if doubtful, should be attached. Necessary plates not exceeding six, or one and a half pages, will be furnished by the Journal.

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Book Reviews: Books and monographs submitted for review should be mailed to the Editor. Acknowledgment will appear in the Journal. Selection rights reserved.

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SOUTHERN MEDICAL NEWS

Continued from page 216

McArthur, Cordele, President-Elect; Dr. W. Frank McKemie, Albany, Vice-President; and Dr. M. F. Simons, Decatur, Secretary-Treasurer.

Drs. James B. Martin and Frank D. Guillebeau, Albany, are new members of the medical staff of the Phoebe Putney Memorial Hospital.

The new President of the Third District of the Georgia Heart Association is Dr. Clarence Butler, Columbus.

Dr. Reid Gullatt, Cochran, was recently elected President of the Ocmulgee Medical Society. Dr. A. S. Batts, Hawkinsville, was elected Vice-President; Dr. Blake Bivins, Cochran, Secretary-Treasurer; and Dr. Virgil S. Steele, Eastman, delegate to the Medical Association of Georgia.

Dr. Evelyn M. Stephenson, Dalton, has joined the staff of the Dalton-Whitfield County Hospital as a pathologist.

Dr. Arthur M. Knight, Jr., Waycross, is the President of the Eighth District of the Georgia Heart Association.

KENTUCKY

The Kentucky Surgical Society will hold its annual meeting at the French Lick Sheraton Hotel on May 13, 1961. For further information write Dr. C. Melvin Bernhard, Secretary-Treasurer, Kentucky Surgical Society, 1169 Eastern Parkway, Louisville 17, Kentucky.

Dr. John Dickinson, Glasgow, is President of the Board of Directors of Kentucky Physicians Mutual. Dr. Richard Rust, Newport, is Vice-President; and Dr. Branham Baughman, Frankfort, is continuing as Treasurer.

Five Kentucky physicians are new members of the American Academy of Pediatrics. They are Drs. Billy M. Adams, J. W. Fowler, Robert Royce Kidd, and Richard F. Greathouse, all of Louisville; and Dr. Noble T. Macfarlane, Jr., Lexington.

Dr. J. Thomas Giannini, Louisville, is the new President of the University of Louisville Medical Alumni. Other officers are Dr. Walter S. Coe, Vice-President; and Dr. Hoyt D. Gardner, Secretary-Treasurer. Members of the Executive Committee are Drs. David Cox, George McAuliffe, and George Sehlinger. All are from Louisville.

LOUISIANA

The new Executive Editor of *Dermatologia Tropica* is Dr. Vincent J. Derbes, Professor and Chairman of the Department of Dermatology, Tulane University Medical School.

Dr. John Adriani, New Orleans, has been elected Director of the American Board of Anesthesiology.

MARYLAND

Dr. Andrew C. Mitchell, Salisbury, was recently elected President of the Maryland Academy of General Practice. Other officers elected to serve with him were Dr. William T. Layman, Hagerstown, Vice-President; Dr. Charles P. Crimy, Baltimore, Secretary; and Dr. Harry L. Knipp, Baltimore, Treasurer.

Dr. Russell R. Monroe has joined the faculty of the University of Maryland School of Medicine as Professor of Psychiatry at the Psychiatric Institute.

Dr. Edwin C. Andrus, Johns Hopkins University School of Medicine, has been promoted to Professor of Medicine.

Dr. William A. Horsley Gantt, Perry Point, has been elected First Vice-President of the Society of Biological Psychiatry.

MISSISSIPPI

The Eighth Annual Cardiovascular Seminar is to be held at the University of Mississippi Medical Center in Jackson, April 5-7, 1961. A Mississippi Heart Association professional education program, the Seminar is co-sponsored by the School of Medicine. Family physicians may obtain 20 hours of Category 1 AAGP credit for attendance.

Dr. Charles C. Randall has been named Assistant Dean of the University of Mississippi School of Medicine in charge of Graduate Studies in the Medical Sciences.

New members of Mississippi State Medical Society are Dr. Duff David Austin, Jr., Newton; Dr. Charles Walter Cooper, Fayette; Dr. Patrick Russell Hunter, Greenville; Dr. Julian Foy Jones, Olive Branch; Dr. Luther Thomas Pennington, Meridian; Drs. John Ivy Davis and William Edward Godfrey II, Natchez; Drs. Paul Sahak Derian, John Campbell Gilliland, William Blackwell Tumlinson and Otis Burton Wooley, Jr., Jackson; Drs. Helen Beatrice Barnes and Thomas Valentine Stanley, Jr., Greenwood; Drs. Littleton Stacy Davidson, Jr., and Phil Otis Nelson, Cleveland.

MISSOURI

At the recent meeting of the Society of Plastic and Reconstructive Surgery, Dr. James F. Dowd, Clayton, was elected its Vice-President.

Officers of Kansas City Southwest Clinical Society recently elected are Dr. Jack H. Hill, President; Dr. M. Donald McFarland, President-Elect; Dr. E. Kip Robinson, Vice-President; Dr. Charles B. Wheeler, Jr., Secretary; Dr. T. Reid Jones, Treasurer; Dr. Hector W. Benoit, Jr., Director of Clinics; Dr. Gerald L. Miller, Director of Clinics-Elect; Dr. William A. Slentz, Associate Director; and Dr. James R. McVay, Jr., Editor. All are Kansas City physicians.

Dr. Luke A. Knese, St. Louis, won re-election on the Democratic ticket to the Missouri House of Representatives from the Fourth St. Louis District.

Dr. Jesse J. Wimp, Kirksville, Democrat, was re-elected to the Missouri House of Representatives from Adair County.

Dr. James S. Johnson, Kansas City, was recently elected President of Kansas City Medical Society.

The following physicians were recently inducted as Fellows of the American College of Surgeons: Dr. Carl H. Calman, Clayton; Dr. John W. Payne, Columbia; Dr. Fred O. Tietjen, Jefferson City; Dr. Eugene T. Hansbrough, Poplar Bluff; Drs. Drennan Bailey, Melvin A. Cassel, Caldwell J. Gaffney, James Y. Griggs, Irwin B. Horwitz, F. Patrick Lamb, Milton I. Lenobel, William T. Newton, Frank A. Palazzo, Kenneth D. Serkes, Arthur H. Stein, Jr., and Robert E. Thomasson, all of St. Louis.

Continued on page 52

BOOK REVIEWS

Tumors of Childhood

By Harold W. Dargeon, M.D., Associate Professor of Clinical Pediatrics, Cornell University Medical College. 2,460 pages. New York: Paul B. Hoeber, Inc., 1960. Price $20.00.

This is a goldmine of clinical information on pediatric oncology. The author has written it because, "although there is voluminous literature on neoplasms for the surgeon, the radiologist and the pathologist, there is no comprehensive textbook from the viewpoint of the pediatrician." Dr. Dargeon, through his affiliation with the Memorial Hospital in New York, has had a unique opportunity for studying the manifestations of cancer as it appears in childhood. He has contributed generously to the pediatric literature on the subject of tumors. This book is a worthy summation of his lifelong efforts to educate the profession in the eccentricities of cancer in the pediatric age group.

The book is divided into two sections. The first deals with the general principles of the diagnosis and the management of childhood tumors. The second section discusses each organ system and presents a general discussion of the common tumors. Separate chapters discuss angiomas, reticuloendothelioses and tumors of the skin and soft somatic tissues.

The text is well organized and easily followed. There are excellent photographs. The bibliography is exhaustive. This book is destined to take its place among the classics of oncology.

Therapeutic Heat

Edited by Sidney Licht, M.D. 446 pages. New Haven, Conn.: Elizabeth Licht, Publisher, 1958. Price $12.00.

This book is the Second Volume of the Physical Medicine Library. The purpose of the editor was to present in one book a comprehensive discussion of the various forms of therapeutic heat and the background subjects.

The 23 authors are well qualified in their respective fields. Fifteen of the group are doctors of physical medicine, four represent other medical specialties, three specialize in physiology and one in biophysics. Many manufacturers cooperated in supplying illustrations and descriptions of equipment.

The book is organized in logical form with the basic science chapters preceding those on methods and clinical application. Each chapter is complete in its scope as indicated by its title. Because of this, there is some overlapping of material and some difference of opinion among the authors as in the comparatively new field of ultrasound but this serves the purpose of giving another point of view on the subject.

The first four chapters deal in detail with physics and physiology, the fifth with thermal radiation, pain and injury. Chapters six and seven give the history and general principles of therapeutic heat. Chapters eight through thirteen discuss methods under the following titles: conduction, luminous and infrared radiation, high frequency currents, short wave diathermy, microwave diathermy, ultrasound and artificial fever therapy. The remaining eight chapters discuss the use of heat in the following clinical situations: chronic rheumatic diseases, orthopedic and vascular disorders, diseases of the pelvis and diseases of the eye. The appendix discusses briefly the medicolegal aspects of therapeutic heat.

The form and general outline of the book are logical, the type is distinct, the illustrations are ample and clear. There is a bibliography for each chapter with the exception of the one on the general principles of thermotherapy. There is an index of authors cited and an index of subject matter. The basic science sections are very detailed and technical but it is helpful to have this material included under one cover to provide complete, up-to-date information on the total subject of heat therapy.

The first volume of this series, *Electrodiagnosis and Electromyography*, was well received and this volume should be equally well received. It should be of value as a reference book to all those in the medical profession who use or prescribe heat therapy. For those not already familiar with to some extent the equipment, the section on technic is not sufficiently specific. The section on clinical application should be of immediate practical value to the general practitioner.

Recent Advances in Surgery

Edited by Selwyn Taylor, Lecturer in Postgraduate Surgery at the University of London. 500 pages. Boston: Little, Brown & Company, 1959.

This is a collection of essays by British surgeons on a variety of topics of current interest encompassing cardiac, vascular, genitourinary, gastrointestinal and neurologic surgery. The general plan is somewhat akin to the American yearly "Progress in Surgery" series. After a brief introduction to each topic, the most recent contributions are presented. Pertinent physiologic principles are included. References are quite comprehensive. Chapters on tissue transplantation, the artificial kidney and body fluids are among the more complex topics covered. Generally, the book is very readable and as current as any such collection can be. It is not intended by the authors to give a full and complete coverage of each topic, as in a standard textbook. It would hence be of greater value to the surgical specialist than to the general practitioner or the occasional surgeon.

A Textbook of Surgical Physiology

By R. Ainslie Jamieson and Andrew W. Kay. 623 pages. Edinburgh, E. & S. Livingstone, Ltd., 1959.

This is a basic textbook designed to present physi-

ologic principles relevant to the everyday practice of surgery. The authors wrote much of the manuscript while they were on the faculty of the medical school at Glasgow University. The material is terse, organized, well illustrated, and relatively free of academic abstruseness. The book was written by two practicing British surgeons for busy clinical surgical practitioners.

The first four chapters review wound healing, biologic effects of radiation, fluid balance and the metabolic response to trauma. Subsequent chapters explore each organ system, e.g., adrenal, thyroid, breast and spleen.

Each chapter begins generally with a lucid discussion of the anatomy, physiology and the experimental methods useful in the study of the particular system. The focus then enlarges as the basic science tenets are correlated with common disease entities.

The book is certainly equivalent to most American texts on the subject and is worthy of consideration by practitioners of surgery at all levels who desire to broaden their clinical perspective.

Laboratory Medicine—Hematology

By John B. Miale, M.D., Professor Pathology, University of Miami School of Medicine, and Director of Clinical Pathology, Jackson Memorial Hospital. 723 pages, 192 illustrations and nine plates. St. Louis: C. V. Mosby Company, 1958. Price $13.75.

The purpose of this volume as stated in the preface is to "emphasize the correlation between laboratory and clinical data" with a range "from basic mechanisms to the interpretation of laboratory data in diagnosis and therapy." Although a little sweeping, this large order has to a certain extent been accomplished. The profuse morphologic illustrations in black and white throughout the book are quite informative. Figure 514D is a beautiful contrast of an LE cell with its closest imitator, and although not commented on, the lack of smoky homogeneity in the "tart" inclusion is well brought out. Unfortunately the color plates (I-V) are excessively blurred in detail and, to a great extent, off-hue. The crux of determining whether or not a given cell is a megaloblast—the nuclear detail—is obscured, and the cytoplasmic blues of the megaloblasts and plasmocytic series are impossibly light ultramarine; elsewhere the granulocytes are unnaturally pink. The section from page 116 to 189 of correlated clinical-peripheral bone marrow pictures of clinical disorder, each with four black and white illustrations, goes a long way to compensate for the color deficiency and in so doing, emphasizes the supreme importance of morphology rather than tinctorial quality, in cell identification. It is regretful that a Schilling (reticulum-cell type) monocytic leukemia could not have been illustrated to contrast with the three Naegeli (myelomonocytic) leukemias presented.

The text presents a full, complete discussion of laboratory findings. The section on statistical significance of laboratory data is particularly outstanding (the misprint "Simga" notwithstanding on 285). The discussions on, for example, the hematocrit and sedimentation rate are excellent; the causes of leukemoid reactions, leukopenia, eosinophilia, etc., are minutely tabulated. After each chapter there is a superior bibliography which, although not annotated within the text, is broken up by sections corresponding to the divisions in the chapter to which it is appended, making reference quite easy. Hematologic laboratory tests are discussed on the basis of mechanism, with a 100 page Appendix detailing the methods themselves. On page 512, the chart on "Typical Serologic Findings in Infectious Mononucleosis" will evoke questions by many. It is somewhat debatable, in the presence of a borderline 1:56 presumptive titer (example 7), that only a one-tube difference after guinea-pig absorption (1:28) is "positive" despite complete absorption by beef cells; it is even more questionable with a normal presumptive liter of 1:28 (examples 9, 10, 11) that any differential absorption results are worthy of objective interpretation. Although the author is completely correct in his theory, the ever-present qualification against one-tube differences and speculation on low titers in biological systems seems to have momentarily departed. Nowhere is found the Beutler test for the "primaquine" type of hemolytic anemia, seen also with the nitrofurantoins, a matter of considerable importance in the South.

The shortcomings in this book lie without the technologic area, however. On page 31 in discussing leukocyte mechanisms it would have been well to have included the recent estimations of the granulocyte transit time (hours) in the blood stream. On pages 265-267 in the survey of bilirubin metabolism, there does not appear any mention of glucuronide conjugation and the significance thereto, making the whole discussion obsolete. Aplastic anemia and the myeloproliferative syndromes are given inappropriately short shift in Chapter 10, two areas which, although linked, should have been given separate consideration at greater length, particularly since the laboratory figures prominently in their evaluation. This text is far too detailed for the student, or the physician without an especial, practicing interest in hematology. For the latter, one would suspect other sources already available would provide the same information at greater length in more depth. Nonetheless, the difficult job of writing a text in the fluid field of hematologic technology has been reasonably well accomplished. As a methodologic compendium and source of morphologic illustrations this volume will be a welcome laboratory reference.

Atlas of Anatomy and Surgical Approaches in Orthopaedic Surgery—Upper Extremity

By Rodolfo Cosentino, M.D., Assistant Professor in Orthopaedic Surgery, University of La Plata, Argentina, and Research Associate, Department of Orthopaedic Surgery, State University of Iowa. 192 pages, illustrated. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $10.50.

To attempt a new series of volumes of anatomy and surgical approaches is an ambitious undertaking. Dr. Cosentino, working at the Department of Orthopaedic Surgery at the State University of Iowa, has presented the first of three volumes, and this volume offers a remarkable and interesting beginning. The technic

used is to prepare meticulous dissections in the anatomy laboratory and then use what is evidently a superior type of photographic technic to reproduce these dissections. This method has a certain advantage for the student who is currently engaged in dissection or for the surgeon who can well recall the anatomy from his own dissecting experience. In the past the photographic technic has not compared favorably with good artists' illustrations, particularly those of the classical European atlases. The present volume, however, promises to be of immense value and will probably be a standard part of the training armamentarium for surgeons.

This volume is recommended for those who need to review the anatomy of the extremities. This would include, therefore, all surgeons who currently perform surgery on the extremities or who anticipate such operations.

The Intestinal Tract

By Richard Paul Spencer, M.D., Department of Biological Chemistry, Harvard Medical School. 398 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $12.75.

This is a volume of unique design. The author, an investigator trained in both biochemical and radioisotope approach, has effectively set out to provide a comprehensive reference source for all the fundamentals of gastroenterology. Much more than a compilation of bibliography, the book reflects careful selection and correlation. An amazing amount of information is presented in a relatively small number of pages.

A partial contents may communicate the breadth of the material: innervation of the intestine, enzymes of the intestinal mucosa, gastrointestinal hormones, electrolyte secretion, antibiotics and intestinal bacteria, cathartics and toxins, potassium metabolism, fecal protein loss, and effects of irradiation. The author makes plain this is not a "bedside" book, yet much of the basic information in gastroenterology is derived from studies of disease processes and in addition, the third portion of the volume is frankly devoted to data on clinical disorders. The reviewer quite agrees with the author that this will serve not only as a "reference for clinical studies," but as an easily read review on "structure, function and pathology" in terms of the basic sciences, is recommended as an introduction to gastroenterology for all.

Bibliograph on Bilharziasis

World Health Organization. 131 pages. New York: Columbia University Press, 1960. Price $2.00.

Another excellent publication of the World Health Organization is this bibliography of the world literature on bilharziasis covering 1949 to 1958, and bringing up to date the earlier bibliographies on the subject published in 1931 and 1950 in other sources. The arrangement is an alphabetical listing by the first author, and each reference is a complete unit citation. The items are numbered by which the references are listed in the combined subject and geographic index at the back. There is no index for secondary authors.

In general, the titles of the articles are given in the original language, except that the Cyrillic characters are transliterated. Both the introduction and the index are written in French as well as in English. Research workers and scholars will welcome this comprehensive and accurate bibliography.

Practical Proctology

By Louis A. Buie, Sr., Emeritus Member, Section of Proctology of the Mayo Clinic, Rochester, Minnesota. 737 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $22.50.

This is a revised edition of an already revered, standard work in this field. The author, an internationally prominent proctologist, presents his material articulately, with an eye toward the practical clinical aspects of the subjects. The first chapter, "The Responsibility of the Physician," includes many of the author's personal observations and his technics of the various proctologic examinations. He emphasized the crucial importance of gentleness and patience in the performance of these sometimes painful and embarrassing procedures. There are many excellent, easily understandable photographs, radiophotographs and schematic diagrams of operative procedures. One special chapter is included on roentgenologic examination of the colon.

The references are not exhaustive but are limited to basic articles. This edition should maintain the stature and the prominence its predecessor achieved. The book can be highly recommended as a handy reference work for the physician who sees occasional proctologic problems or as a dignified and sophisticated resumé for the specialist in this field.

Crash Injuries

By Jacob Kulowski, M.D., Attending Orthopaedic Surgeon, St. Joseph's Hospital and State Hospital, St. Joseph, Mo. 1,080 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $32.50.

This is a scholarly and comprehensive monograph which surveys the field of vehicular trauma from all conceivable aspects. The book is divided into seven sections. The first two parts deal with the engineering principles and the physical forces involved in the production of the various types of injuries. The two following sections present the detailed pathologic findings in the various injuries and statistically relate the type of trauma to the situation at the moment of impact. The fifth and sixth sections provide valuable clinical information designed to help the practitioner and the surgeon acquire an integrated concept of the treatment of maxillofacial, thoracic, abdominal, urologic, neurosurgical and orthopedic injuries. The author constantly emphasizes and illustrates problems of judgment in patients with multiple system involvement. The final section discusses epidemiologic, legal, psychiatric and experimental aspects of crash injuries.

The text is profusely accompanied by radiophotographs, tables, and diagrams. The bibliography is exhaustive. Although much of the book deals with mat-

ters designed for the prevention of traffic casualties, the clinical sections compete with the best texts in traumatology. The book merits perusal by anyone whose practice includes traffic victims.

The Placenta and Fetal Membranes

Edited by Claude A. Villee, Ph.D., Harvard Medical School. 404 pages. Baltimore, Md.: The Williams and Wilkins Co., 1960. Price $10.00.

This book is a reflection of the new interest in the structure and function of the placenta. In the past dozen years its study has been accelerated and advanced by application of modern technics of histochemical, electronmicroscopic, and biochemical methods. The present book is divided into three parts. The first 109 pages, probably the most interesting and useful, are comprised of eight reviews ranging from the hormonal, physiologic, immunologic and biochemical, to the pathologic aspects of the placenta and placentation. This information represents an authoritative description of its kind. The middle third of the book consists of a conference dealing with the same problems and tends to be a little more difficult for the reader to ferret out the important information. This portion presents laboratory data and a relatively informal discussion of this by an assembly of experts. The last portion of the book is a survey of the literature from 1946 to 1958. This appears to be exceedingly detailed and is well catalogued. It will be useful for all those who need to search out references to the literature. The list includes the important books of the past decade on the subject of the placenta and fetal circulation. Finally, the book contains a short summary of the American and foreign programs of research dealing with this subject.

Altogether this is an excellent book and should be useful for persons concerned with reproduction and the study of the problems related. The Preface of the book begins with a description of the magnitude of pregnancy waste, that is, fetal and maternal deaths. This seems to be used as a justification for the present interest in study of these problems. In view of the magnitude of our problem of population control, and without detracting from the humanitarian aspects of pregnancy waste, it would seem to this reviewer that there are better reasons for studying reproduction than for further reduction of fetal waste. This is particularly so when one considers the small proportion of the world's mortality that is represented by fetal waste.

The Anonymous Mycobacteria in Human Disease

Sixth Annual Ivan H. Mattson I Memorial Conference of the University of Texas Southwestern Medical School. Edited by John S. Chapman, M.D. 161 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $7.50.

This slim monograph contains the transcript of a conference at the University of Texas Southwestern Medical School in which the mycobacterial experiences at that institution and the State Laboratory at Austin are related. With the advent of specific tuberculosis chemotherapy in the past decade, the corresponding importance of multiple cultures has drawn attention to heterogenous organisms which possess many of the characteristics of true *Mycobacterium tuberculosis*, including the capacity on occasion to produce pulmonary disease in man, but in whom important differences from the classic organism exist.

Satisfactory classification within this group, and criteria by which certain types may be recognized as having a more likely penchant for pulmonary disease than others, have been problematic and emerged slowly. Outweighing the relatively minor role these organisms play in pulmonary and tuberculous disease at large, have been the lessons learned from the forced inquiry into matters such as mutation and drug resistance, metabolic characterization of *M. tuberculosis* from other mycobacteria, and certain alteration of our views of pathogenicity.

Technical details are incidental in the discussions devoted to assessment of significance and progress in this area. Chapters cover x-ray characterization, pathologic differences, occurrence in private as well as institutional practice, and drug treatment. The illustrations are very good. The two sections by Dr. Runyon are the most impressive, lucidly correlating cultural and clinical findings to date. Devoted to a narrow region, and in view of ongoing research of highly temporal value, this brief volume has its main appeal to pulmonary physicians, chest surgeons and bacteriologists.

Pseudomonas Aeruginosa Infections

By Claude E. Forkner, Jr., M.D., Assistant in Medicine, Cornell University Medical College. Modern Medical Monographs, 99 pages. New York: Grune & Stratton, Inc., 1960. Price $5.25.

This is a compactly written and organized monograph dealing with an organism which, by virtue of its fluorescent green pigment has fascinated people for years, and has become of profound clinical significance in recent years coincident with longer survival in illnesses such as burns and leukemia, the advent of steroids and the use of wide-spectrum antibiotics.

In the space at his command the author has done well. The brevity of his comments throughout is disappointing, as the scholarly length of his bibliography indicates the volume could have easily been expanded into book length with great profit. As is, all the recorded cases of Pseudomonas endocarditis, meningitis, infections associated with pregnancy, and infections of bones and joints through early 1960 are tabulated herein. Excellent clinical and pathologic illustrations from the author's previously reported series of 23 cases of Pseudomonas septicemia are freely used.

The importance of this organism as a freely found topical contaminant and a particularly lethal pathogen systematically with endotoxin reaction, thrombocytopenia, vasculitis and antibiotic refractoriness, capable of involving primarily every system, make this capable volume of interest to every specialty.

A Textbook of Surgical Pathology

By C. F. W. Illingworth, C.B.E., M.D., Regius Professor of Surgery, University of Glasgow; and Bruce M. Dick, M.B., F.R.C.S. (Ed.), Western Region,

Scotland. Eighth Edition. 689 pages. Boston: Little, Brown & Company, 1960. Price $15.00.

This textbook was written by a general surgeon and a thoracic surgeon. It is intended to be primarily a clinical treatise. The microscopic features of the various entities are summarized but are not exhaustive. Medical diseases, such as glomerulonephritis are not mentioned at all. The black and white photographs and the drawings are excellent. There are no color photographs. All the organ systems are covered with the notable exception of the skin. The section on the cardiovascular system is extremely brief and most of the newer concepts of the pathologic physiology of diseases in this area are not mentioned. Some chapters, such as the one on bone diseases, are more comprehensive and quite clearly written. No references of any kind are included.

This book seems primarily directed toward medical students and practitioners or specialists who need a succinct survey of surgical pathology as it is related to clinical surgery. It is not intended to be a reference work. Neither is it meant to cover the field in sufficient depth to attract those interested primarily in pathology.

Arthritis and Allied Conditions

Edited by Joseph Lee Hollander, M.D. Sixth Edition. 1,285 pages, 417 illustrations. Philadelphia: Lea & Febiger, 1960. Price $20.00.

As chronic diseases and those due to degenerative changes in tissues have taken a more prominent place on the stage of clinical medicine, the arthridites have come to occupy an ever enlarging role. As the family physician, the internist and the orthopedist have faced this increasing problem they have found, for authoritative consultation, the text by Hollander and his collaborators of inestimable value. It carries forward the traditions first established by Dr. Bernard Comroe who published the first edition of this book in 1940. It was after his death that Dr. Hollander assumed the responsibility of continuing Dr. Comroe's text, and in the present, sixth edition, he has extended not only the content, but also the brilliant contributors who had helped him in his previous editions.

Contributors to the present volume include 40 names, almost all of which immediately call to mind an outstanding rheumatologist. Space does not permit the detailing of all the writers who have contributed to this volume, but it would not be fair to select only one group of names.

Suffice it to say that the contents are divided into parts which are as follows: (1) The Study of Rheumatic Diseases, (2) The Study of Rheumatoid Arthritis, (3) The Treatment of Rheumatoid Arthritis, (4) Factors Influencing the Onset or Course of the Rheumatic Diseases, (5) Important Rheumatic Diseases Resembling Rheumatoid Arthritis, (6) The Diffuse Connective Tissue Diseases, (7) Degenerative Joint Disease, (8) Metabolic Bone and Joint Diseases, (9) Arthritis Caused By or Occurring With Specific Infections, (10) Miscellaneous Conditions Complicating or Producing Arthritis, and (11) Regional Disorders of Joints and Related Structures.

Without going into detail, the reviewer, who uses this book frequently as a reference text, can only say that this is *the* one authoritative book on arthritis unchallenged by any other. The reviewer need say no more than advising that anyone dealing with the diseases of systemic origin should have this book on his book shelf for reference in the field of arthritis and allied diseases.

The Principles and Practice of Chiropody

By John H. Hanby, F.Ch.S., Guy's Hospital and London Foot Hospital, and H. E. Walker, F.Ch.S., Superintendent, London Foot Hospital. Second Edition. 424 pages. Baltimore: The Williams & Wilkins Company, 1960. Price $7.00.

This is a small but comprehensive textbook by two British chiropodists. Diseases affecting the foot are discussed in detail in a language which is understandable by nonmedical people. The early chapters deal with anatomic and functional aspects of the foot. Then each subject is reviewed in detail, including corns and calluses, foot strain, metatarsalgia, hallux valgus, and various disorders of the nails. Three chapters are included on basic medical and surgical diseases which can present with foot abnormalities. Detailed descriptions of antisepsis and minor surgical procedures are quite good. There are two excellent chapters on the theory and the technic of preventive padding of the foot to prevent further progression of foot disease after it has come under treatment. A final two sections treat various corrective types of footwear and the theory of their use.

This little monograph furnishes the student of chiropody with enough information to help him treat those foot disorders which are within his jurisdiction, and recognize any foot diseases which should be referred to the proper medical consultant. It also provides an entirely adequate reference manual for any physicians who feel incompetent to minister to this often neglected but altogether too common group of ailments.

Radiation Injury in Man

By Eugene P. Cronkite, M.D., Head of Division of Experimental Pathology, Medical Research Center, Brookhaven National Laboratory, and Victor P. Bond, M.D., Head, Division of Microbiology, Medical Research Center, Brookhaven National Laboratory, Upton, N. Y. 194 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1960. Price $6.50.

Drs. Cronkite and Bond of Brookhaven National Laboratory have attempted in this book to remove some of the "aura of mystery" from ionizing radiation and its biologic effects. The book is intended for practicing physicians, for teachers of science, for technicians, medical and dental students, in short for those who are not physicists or mathematicians but who desire and have an obligation to know something of radiation effects on man. The authors in the introductory chapter outline the reasons the reader needs to know the facts in today's world about radiation in case there remains doubt in anyone's mind. The striking fact of 230,000 curies of radioactive materials shipped from Oak Ridge is an example of the ma-

terial in this chapter. The remainder of the book is a restrained, authoritative discussion of ionizing radiation, its interactions with matter, dosimetric considerations, the nature of radiation injury and its prevention and treatment, and the acute and long-term or delayed radiation syndromes. The value of the book is greatly enhanced by the ability of the authors to illuminate the subject without resort to page upon page of mathematical formulas. Their discussion of the current controversy and facts regarding induction of tumors and genetic damage in humans is fair, and their conclusions should be applicable into the foreseeable future. While newer information has become available since this volume went to press, it in no wise compromises the authors' viewpoints regarding the effects of low doses of radiation. In this book a plea is made for the physician to recognize his obligation to be knowledgable concerning radiation effects on humans. The reviewer would like to echo the plea and to recommend this small volume as a painless, even pleasant way to achieve this goal.

Textbook of Surgery

By Loyal Davis, M.D., Chairman of the Department of Surgery, Northwestern University Medical School. 1,551 pages. Philadelphia: W. B. Saunders Company, 1960.

This is a newly revised edition of a famous surgical textbook whose standing reputation makes any further attempts at praise seem superfluous. Its list of contributors includes renowned department chairmen of universities in every section of the country. "Surgery is the art of the application of anatomy, physiology, bacteriology, pathology, biochemistry, pharmacology and other sciences to the best care of the patient" as Dr. Loyal Davis conceives it in the preface to the book. Each contributor adheres to this viewpoint in the presentations of the various subjects, integrating basic sciences with practical clinical medicine. Every subspecialty is covered in the table of contents.

This revision of the book maintains the high standards of the previous editions and assures its position among the leading standard surgical textbooks of the world.

Cardiac Resuscitation

By J. Willis Hurst, M.D., Professor and Chairman of the Department of Medicine, Emory University School of Medicine, Atlanta. 141 pages. Springfield, Ill.: Charles C. Thomas, Publisher. Price $5.50.

This is a collection of a group of discussions held in a symposium on cardiac resuscitation at Emory University School of Medicine in 1959. The subject is reviewed from several different standpoints, including a brief chapter on the physiology of oxygen deprivation, the roles played by the internist, the surgeon and the anesthesiologist in this area. An unusual feature is the inclusion of chapters by a minister and a lawyer on the implications of cardiac arrest in their respective fields. Especially noteworthy is a chapter by Dr. Paul M. Zoll on the use of the external pacemaker and defibrillator.

The book is not intended to be comprehensive but gives a succinct, convenient, quick summary of the problem as it stands today.

The Kinetics of Cellular Proliferation

Edited by Frederick Stohlman, Jr., M.D. Proceedings of a Conference held in January, 1959. 446 pages. New York: Grune & Stratton, Inc., 1959. Price $5.75.

This book, edited by Frederick Stohlman, Jr., is the first exclusively devoted to the mechanism and control of production of the formed elements of the blood. While the title is a general one, "Cellular Proliferation," the specific *in vivo* studies of proliferation of cells deals with those cellular elements found in the blood. The probable reason for this parochial view is the relative ease of study afforded by the blood and blood-forming organs. In any event this in no way detracts from the book or limits its usefulness only to hematologists.

The list of contributors is impressive. The scope of presentation is wide, ranging from a discussion of morphologic technics, including electron microscopy, DNA synthesis, stability, and degradation, through studies using DNA labels, erythropoesis and erythropoetin and a final chapter on mathematical considerations in determining rates of proliferation in steady and nonsteady states. An outstanding feature of the book is the inclusion of discussions following presentation of each of the papers which are free and illuminating. Evaluation of the results of research in each area is thereby available in a much more informal manner than is usual. Those who are not familiar with the various technics used or the manner of analysis of the data will find the discussions some of the most useful sections of the book.

The book has realized its objective of making available the newest information in a field burgeoning with new discoveries. Many of our old concepts are being shaken and this book points toward a new way of thinking quantitatively in areas of response to injuries and leukemia in humans. A final summing up in the book is excellent.

This is not a book for the casual reader but for all interested in fundamental concepts of growth of cellular populations and for those in the areas of hematology and cancer research it is a "must." The book is beautifully and permanently bound, and well illustrated.

From Fish to Philosopher

By Homer W. Smith. Supplement, 291 pages. Summit, N. J.: Ciba Pharmaceutical Products, Inc., 1959.

The biologic scientist who can relate his own field of interest to the remainder of scientific and cultural information about life is a master, indeed. Dr. Homer Smith has included in his "Cinerama of the Kidney" a storehouse of facts and concepts ranging from archeologic data to the latest pharmacologic information on edema. The remarkable thing is that he always maintains an interesting style, a surprising content, and each chapter is readily readable. The Ciba edition, now in paperback format, is recommended for science students whatever their age or field of interest.

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1. Hock, C. W.: Treatment of Gastrointestinal Disorders with an Anticholinergic Tranquilizer Combination, J. M. A. Georgia 48:218 (May) 1959. 2. Investigators' Clinical Reports: Analysis of reports by 117 physicians in 500 patients. 3. Barowsky, H.; Schwartz, S. A., and Lister, J.: Experience with Short-Term Intensive Anticholinergic Therapy of Peptic Ulcer, Am. J. Gastroenterol. 27:156 (Feb.) 1957.

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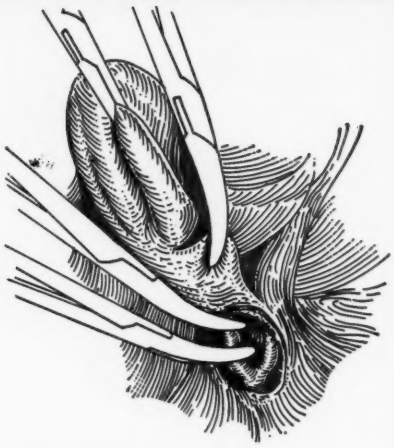

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He may be told that, among animals of similar dietary habits and digestive processes, some have a gallbladder and some do not. Among the herbivores, the cow and sheep have one, the deer and horse do not; among the omnivores, the mouse has one but the rat does not.

Source: Farris, J. M., and Smith, G. K.: M. Clin. North America *43*:1133 (July) 1959.

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"Constant loss of bile [from relaxation of sphincter of Oddi following cholecystectomy] reduces the amounts available for lipid absorption after meals, with resulting clinical symptoms apparently relieved by bile acid administration." *Source:* Popper, H., and Schaffner, F.: Liver: Structure and Function. New York, McGraw-Hill 1957, p. 309.

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AS A SERVICE TO THE PRESCRIBING PHYSICIAN, BELOW IS A COMPLETE STATEMENT OF DOSAGE AND PRECAUTIONS AS SET FORTH IN THE BASIC PRODUCT LITERATURE.

DOSAGE (Tablets and Suspension)

For severe infections:

Adults: 4 tablets or 8 teaspoonfuls (2 Gm) initially followed by 2 tablets or 4 teaspoonfuls (1 Gm) daily thereafter.

Children:

Body Weight	Initial Dose	Daily Dose Every 24 Hours Thereafter
20 lbs	0.5 Gm { 1 tablet or { 2 teaspoonfuls	0.25 Gm { ½ tablet or { 1 teaspoonful
40 lbs	1 Gm { 2 tablets or { 4 teaspoonfuls	0.5 Gm { 1 tablet or { 2 teaspoonfuls
80 lbs	2 Gm { 4 tablets or { 8 teaspoonfuls	1 Gm { 2 tablets or { 4 teaspoonfuls

DOSAGE (Pediatric Drops)

For moderate to severe infections: 2 drops (25 mg) per pound body weight followed by 1 drop (12.5 mg) per pound body weight daily thereafter.

Continue therapy for 5 to 7 days or until patient is asymptomatic for at least 48 hours.

For mild infections: Less severe infections will usually respond to one-half the above dosage.

Caution: The usual precautions in sulfonamide therapy should be observed, including the maintenance of an adequate fluid intake. In the event of headache, nausea, vomiting, urticaria, rash, fever or hematuria, the use of the drug should be discontinued. When Madribon is used intermittently or for prolonged periods, blood counts should be performed to determine whether blood dyscrasias have occurred. The use of the drug should be stopped immediately if alterations in the hematopoietic system are observed. Patients with impaired renal function should be followed closely since renal impairment may cause excessive drug accumulation. Madribon should not be administered to patients with a history of adverse reactions to sulfonamide therapy.

Madribon, like most sulfonamides and certain other drugs, is probably contraindicated in premature infants – and newborn infants for the first week of life – because of underdeveloped enzyme systems and immature liver and renal functions.

Packages: Madribon Tablets: 0.5 Gm. double-scored, monogrammed, gold colored – bottles of 30, 100, 250, and 1000. Madribon Suspension: 0.25 Gm/teasp. (5 cc), custard flavored – bottles of 4 oz and 16 oz. Madribon Pediatric Drops: 250 mg/cc (20 drops) – 10-cc bottle with drop-dispensing tip.

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Riboflavin	1 mg.
Nicotinic Acid (Niacin)	5 mg.

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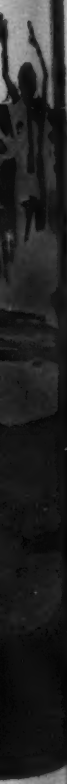

"sure...I used a crash diet...lost five pounds and now I've gained it all back!"

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Pain, B. T., Texas State Journal of Medicine, 53:849-51 (1957)
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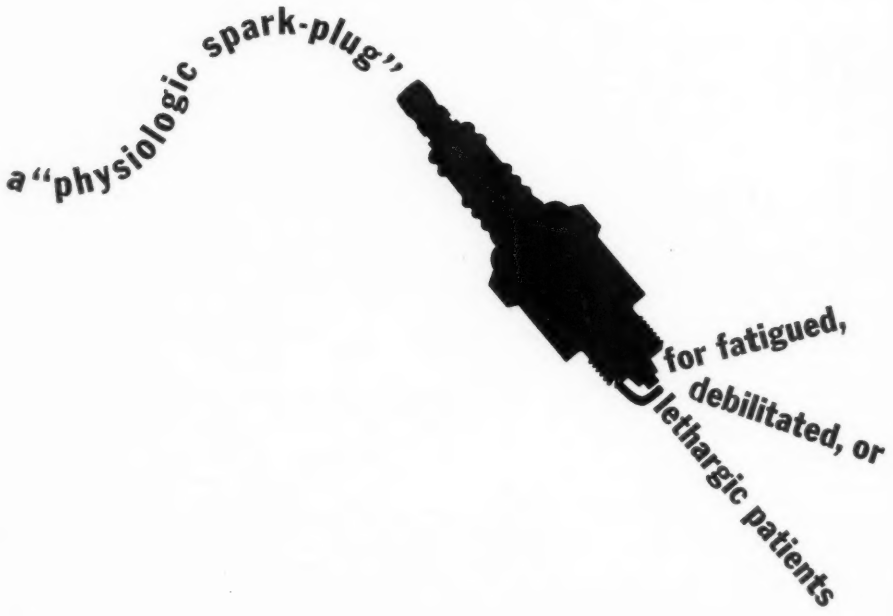

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Supply: Nico-Metrazol Tablets and Elixir—100 mg. Metrazol and 50 mg. nicotinic acid in each tablet or teaspoonful.

For information on Vita-Metrazol and Metrazol dosage forms, consult your current Physicians' Desk Reference.

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Controls inflammation, curtails swelling, curbs pain

1. Beck, C., *et al.*: Clin. Med. 7:519, 1960. 2. Teitel, L. H., *et al.*: Indust. Med. 29:150, 1960. 3. Billow, B. W., *et al.*: Southwestern Med. 41:286, 1960. 4. Clinical Reports to the Medical Department, Armour Pharmaceutical Company, 1960. 5. Taub, S. J.: Clin. Med. 7: 2575, 1960.

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Chymoral is an ORAL anti-inflammatory enzyme tablet specifically formulated for intestinal absorption. Each tablet provides enzymatic activity, equivalent to 50,000 Armour Units, supplied by a purified concentrate which has specific trypsin and chymotrypsin activity in a ratio of approximately six to one. ACTION: Reduces inflammation of all types; reduces and prevents edema except that of cardiac or renal origin; hastens absorption of blood and lymph extravasates; helps to liquefy thick tenacious mucous secretions; improves regional circulation; promotes healing; reduces pain. INDICATIONS: Chymoral is indicated in respiratory conditions such as asthma, bronchitis, rhinitis, sinusitis; in accidental trauma to speed absorption of hematoma, bruises, and contusions; in inflammatory dermatoses to ameliorate acute inflammation in conjunction with standard therapies; in gynecologic conditions such as pelvic inflammatory disease and mastitis; in obstetrics as episiotomies and breast engorgement; in surgical procedures as biopsies, hernia repairs, hemorrhoidectomies, mammectomies, phlebitis and thrombophlebitis; in genitourinary disorders as epididymitis, orchitis and prostatitis; in dental and oral surgery as fractures of the mandible or maxilla, difficult or multiple extractions, and alveolectomies. CONTRAINDICATIONS: None known. INCOMPATIBILITIES: None known. Antibiotics as well as generally accepted measures may be coadministered. SIDE EFFECTS: Mild gastric upsets, rarely encountered. DOSAGE: Recommended initial dose is two tablets q.i.d.; one tablet q.i.d. for maintenance. SUPPLIED: Bottles of 48 tablets.

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WANTED—General Practitioner or General Surgeon for Group Practice in Southern Clinic Industrial Medicine Division. Guaranteed salary, percentage arrangement and fringe benefits. Contact RR, c/o SMJ.

Continued from page 226

The President of the University of Missouri has announced the appointment of Dr. William D. Mayer as Assistant Dean and Assistant Professor of Pathology. He will assume the position June 1, 1961.

NORTH CAROLINA

Dr. Paul Gross, Duke University scientist was named President-Elect of the American Association for the Advancement of Science recently. He will take office on January 15, 1962.

Dr. Floyd W. Denny, Jr., was named head of the Department of Pediatrics of the University of North Carolina School of Medicine.

New members of the Medical Society of the State of North Carolina are Dr. Pleasant Paul Deaton, Morganton; Dr. Dockery Durham Lewis, Statesville; Dr. Albert Hopkins Fink, Banner Elk; and Dr. John Ashley Goree, Durham.

The Duke University Medical Center has announced three new appointments to the faculty in the Biochemistry Department. Dr. Charles Tanford is Professor of Physical Biochemistry; Dr. Ralph E. Thiers is Associate Professor of Biochemistry and Associate Director of Duke Hospital's clinical chemistry laboratory; and Dr. Walter R. Guild is Associate Professor of Biophysics.

Dr. Chauncey G. Bly has recently been appointed

Continued on page 54

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NICOZOL COMPLEX improves mental and physical well-being. Improves protein and calcium metabolism. A preventive agent in common degenerative changes.

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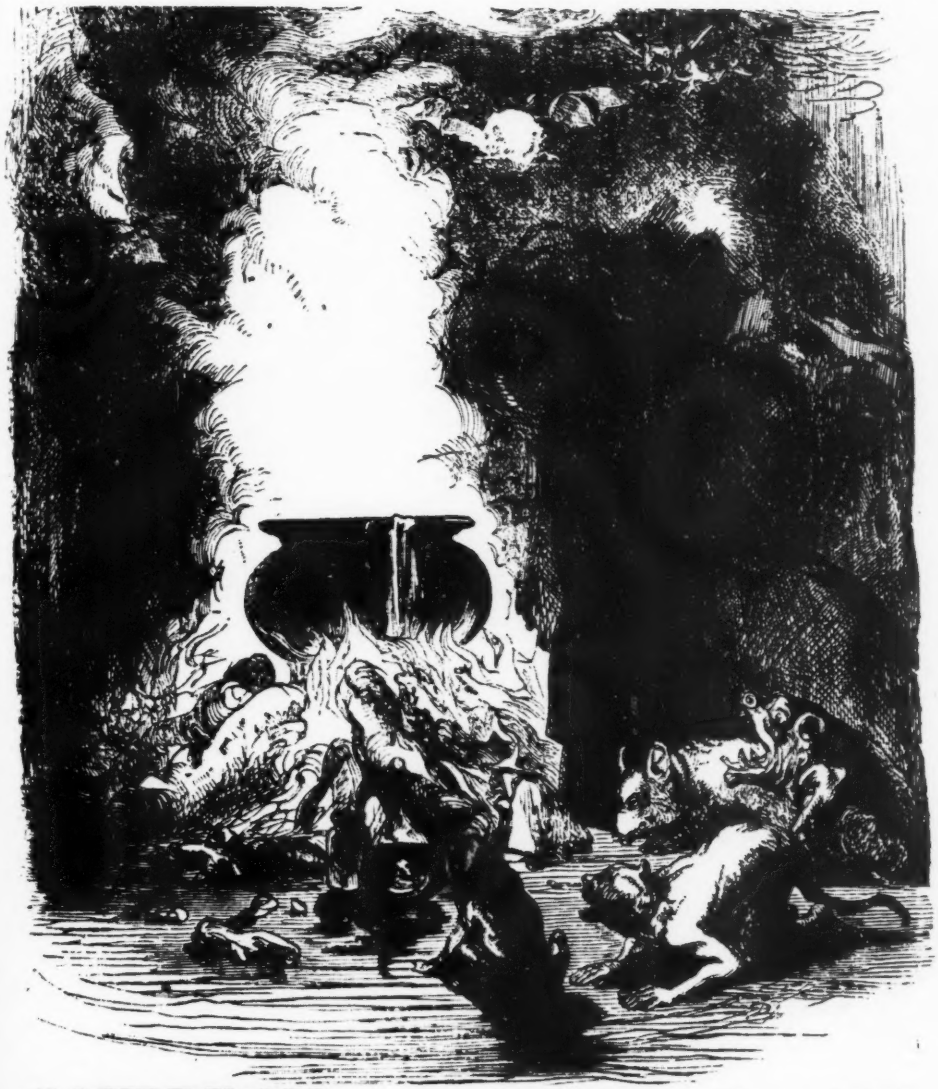

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Continued from page 52

Research Professor of Pathology at Bowman Gray School of Medicine of Wake Forest College. Another addition to the faculty is Dr. Warren N. Dannenburg, who is Research Assistant Professor of Biochemistry.

Dr. Howard H. Bradshaw, Professor and Chairman of the Department of Surgery at the Bowman Gray School of Medicine, will serve on the National Institutes of Health's Clinical Research Fellowships Review Panel for a four year term.

Dr. Richard C. Proctor, Bowman Gray School of Medicine, has been re-elected Secretary-Treasurer of the Southern Psychiatric Association.

Several North Carolina physicians were inducted recently as Fellows of the American College of Surgeons. They are Dr. M. Harvey Rubin, Greensboro; Dr. W. Grimes Byerly, Jr., Hickory; Dr. Frederick P. Dale, Kinston; Dr. John C. Lawrence, Lumberton; Dr. Duwayne D. Gadd, Pinehurst; Dr. Warren J. Collins, Shelby; Dr. J. Ralph Dunn, Jr., Tarboro; Dr. Jesse H. Meredith, Winston-Salem; Dr. Jack Powell, Asheville; Dr. John E. Way, Beaufort; Dr. Donald W. Robinson, Camp Lejeune; Drs. Benjamin H. Flowe and Edwin M. Tomlin, Concord; Drs. Victor A. Politano and W. Glenn Young, Jr., Durham; and Dr. Crowell T. Daniel, Jr., Fayetteville.

SOUTH CAROLINA

Dr. William W. Pryor, Greenville, is the new President of the Greenville County Heart Council.

Dr. Kenneth M. Lynch, Jr., Professor of Urology at the Medical College of South Carolina, is the new President of the South Carolina Chapter of the American College of Surgeons. Dr. William Cantey, Columbia, was elected Vice-President and Dr. Randy Bradham, Charleston, Secretary-Treasurer.

New officers of the South Carolina Obstetrical and Gynecological Society were recently installed. They are Dr. Rowland F. Zeigler, Florence, President; Dr. James M. Wilson, Charleston, President-Elect; and Dr. John Richard Sosnowski, Charleston, Secretary-Treasurer.

Dr. Angus Hinson, Rock Hill, has been chosen to represent the field of general surgery on the Medical Advisory Committee of the State Vocational Rehabilitation Department.

New President of the Greenwood County Medical Society is Dr. F. C. McLane, Ware Shoals. Dr. R. M. Christian, Greenwood, was elected to serve with him as Vice-President.

Dr. George G. Durst, Sullivan's Island, has been elected President-Elect of the Clemson Alumni Association.

Dr. Robert E. McCall has joined the staff of the Columbia VA Hospital.

New Fellows of the American College of Surgeons include: Dr. Thomas F. Stanfield, Anderson; Dr. William T. Lineberry, Jr., USN, Beaufort; Drs. Daniel W. Boone, Jr., USN, Henry R. Ennis, USN, and Carter P. Maguire, Charleston; Dr. Stanley C. Baker,

Continued on page 56

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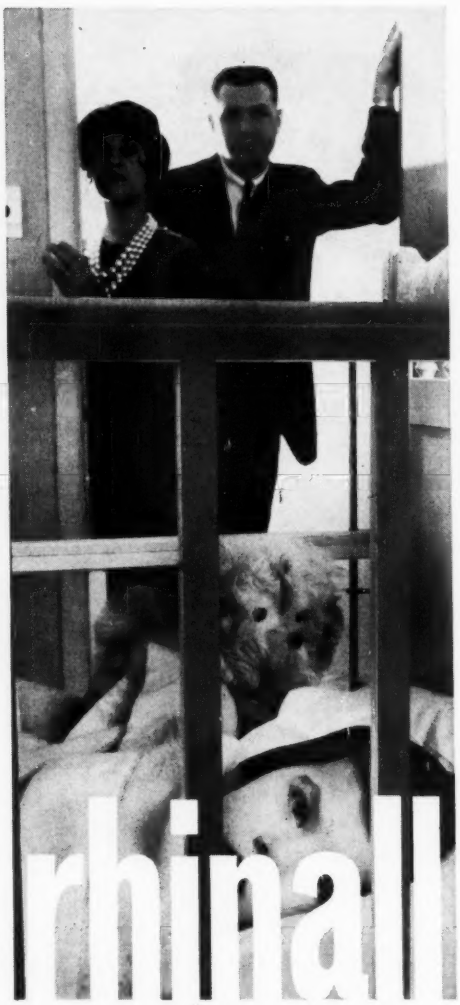

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- Physiological rationale

Prescribed by physicians for over 25 years.

Contains:
Phenylephrine Hydrochloride 0.15%,
'Propadrine' Hydrochloride 0.3%
In an Isotonic Saline Menstruum.

RHINOPTO COMPANY 3905 Cedar Springs • Dallas, Texas

Continued from page 54

Jr., Greenwood; Dr. Richard C. Horger, Orangeburg; and Dr. Belton J. Workman, Jr., Woodruff.

TENNESSEE

Dr. Cleo M. Miller, Nashville, is the new President of Vols, Inc., fan-owned baseball team in the Southern Association.

New officers of the Tennessee Academy of General Practice were recently installed. They are: Dr. John L. Armstrong, Somerville, President; Dr. Wm. A. Hensley, Jr., Cookeville, President-Elect; Dr. John T. Carter, Germantown, Vice-President; and Dr. W. W. Wilson, Old Hickory, Secretary-Treasurer. The Academy also named Dr. Harmon L. Monroe, Erwin, GP of the Year.

Dr. Lawrence D. Amick has joined the staff of the University of Tennessee College of Medicine as Associate Professor of Physical Medicine and Rehabilitation.

Dr. John W. Runyan has been elected Director of Medical Clinics at University of Tennessee College of Medicine.

Dr. L. M. Graves, Memphis, has been elected by the Directors of the Tennessee Division of the American Cancer Society as Vice-President for the West Tennessee region.

Medical officers of the Le Bonheur Children's Hospital in Memphis have been elected. They are Dr. James N. Netteldorf, President and Chief of Staff; Dr. W. Price Stepp, Vice-President; Dr. S. H. Turnbull, Secretary; Dr. Earl L. Wrenn, Jr., Chief of Surgery; and Dr. C. H. Householder, Chief of Medicine.

Dr. Jack Chesney, Knoxville, recently took office as President of the Knoxville Academy of Medicine. Dr. Dewey Peters, also of Knoxville, is President-Elect.

Dr. Alfred D. Mason, Memphis, elected President of the Southeastern Section, American Urological Association, will be installed in March.

The new President of the Upper Cumberland Mental Health Association is Dr. C. B. Roberts, Sparta.

Dr. W. R. Bishop, Chattanooga, was elected to the Executive Council of the Association of Life Insurance Medical Directors of America.

Dr. James D. Lane, Lafayette, has joined the staff of the Smith-Chitwood Hospital.

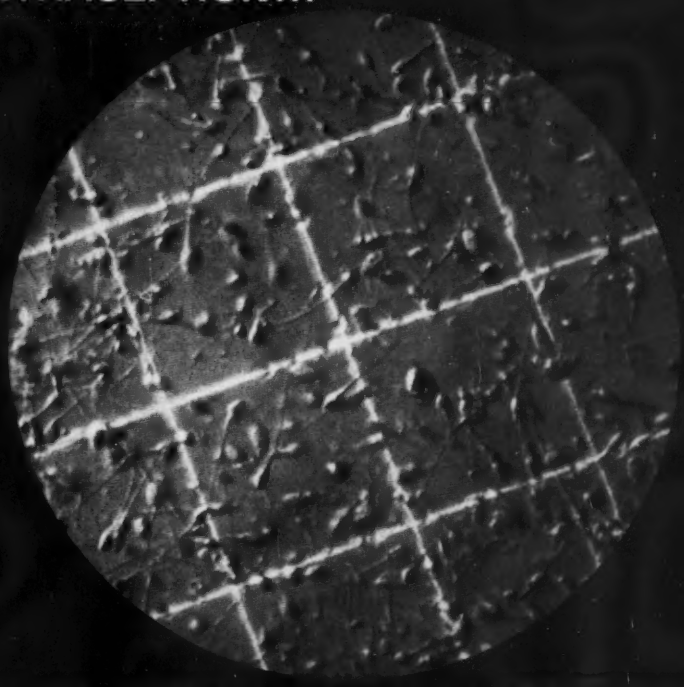
The Knox County Unit of the American Cancer Society presented a Distinguished Service Award of Merit to Dr. Victor H. Klein, Jr., Knoxville.

Dr. Harry A. Stone, Chattanooga, is a new member of the Board of Directors of the Hamilton County Unit of the American Cancer Society.

Physicians recently licensed in Tennessee are Drs. Robert W. Youngblood, Fred W. Byden, Charles W. Logan, Larry E. Douglass, George N. Austin, and Frank A. Loda, Jr., all of Nashville; Drs. Clifford F. Kerby, Max Foner, and Varna M. P. Love, Memphis; Drs. Thomas L. Buttram and Clarence B. C. Marsh, Chattanooga; Dr. Theodore G. Smith, Murfreesboro; Dr. Robert H. Bossert, Cleveland; Dr. James R. McKinney, Morristown; Dr. Edward M. Schaeffer, Iowa

Continued on page 66

IN CONTRACEPTION...



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Because the active ingredients of a spermicidal preparation must diffuse rapidly into the seminal clot and throughout the vaginal canal to be clinically effective. Lanesta Gel offers this *dual* protection. Its four spermicidal agents quickly invade the clot to stop the main body of sperm. It spreads evenly and quickly throughout the vaginal canal—seeks out every wrinkle and fold that may offer concealment to sperm. With this rapid diffusion, your patient receives full benefit of the swift spermicidal action of Lanesta Gel — in minutes — a decisive measure in conception control.

In Lanesta Gel *7-chloro-4-indanol,* a new, effective, nonirritating, nonallergenic spermicide, produces immediate immobilization of spermatozoa in dilution of up to 1:4,000. The addition of 10 per cent NaCl in ionic form greatly accelerates spermicidal action. Ricinoleic acid facilitates rapid inactivation and immobilization of spermatozoa and sodium lauryl sulfate acts as a dispersing agent and spermicidal detergent.

Lanesta Gel with a diaphragm provides one of the most effective means of conception control. However, whether used with or without a diaphragm, the patient and you, doctor, can be certain that Lanesta Gel provides faster spermicidal action — plus essential diffusion and retention of the spermicidal agents in a position where they can act upon the spermatozoa.

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Lanesta® Gel

Supplied: Lanesta Exquiset® . . . with diaphragm of prescribed size and type; universal introducer; Lanesta Gel, 3 oz. tube, with easy clean applicator, in an attractive purse. Lanesta Gel, 3 oz. tube with applicator; 3 oz. refill tube — available at all pharmacies.

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as powerful as the narcotics in cough suppression... but much longer acting

NON-NARCOTIC

ULO®

Chlophedianol HCl

SYRUP

one teaspoonful affords 4 to 8 hours' freedom from cough distress

ULO maintains its maximal cough-suppressant effect undiminished for 4 to 8 hours, thus calling for fewer daytime doses and usually providing freedom from cough distress through the night.

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There are no known contraindications. Free from the undesirable side actions of narcotics. Side effects such as nausea and transient dizziness occur infrequently.

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Used in thousands of patients with acute cough from any cause, ULO has proved as effective as narcotics but superior to them in duration of action.

Write for Physicians' Reference Brochure with full bibliography.

For Children, too

Exceptionally well tolerated; no narcotic overlay; compatible with other indicated medications.

Riker

Northridge, California

Introducing new therapy for

hypertension and congestive failure

lowers blood pressure
drains excess water
calms apprehension

Now the most widely prescribed diuretic-antihypertensive, hydrochlorothiazide, is combined with the most widely prescribed tranquilizer, meprobamate. It is called "Miluretic", and constitutes new therapy for hypertension and congestive failure — *especially when emotional factors complicate treatment.*

What does Miluretic do? Both components are of proven value in the management of hypertension. In congestive failure, Miluretic provides smooth, continuous diuresis. But Miluretic's biggest advantage is that it tranquilizes hypertensive and edematous patients safely and quickly—*a boon to the physician whose patients' emotional reaction to their condition complicates therapy.* Unlike Rauwolfia compounds, Miluretic does not cause depression or nasal congestion.

new **Miluretic***

MILTOWN® + HYDROCHLOROTHIAZIDE

Composition: 200 mg. Miltown (meprobamate, Wallace) + 25 mg. hydrochlorothiazide

Dosage: For hypertension, 1 tablet four times a day. For congestive failure, 2 tablets four times a day.

Supplied: Bottles of 50 white, scored tablets

Available at all pharmacies

Write for samples and complete literature to

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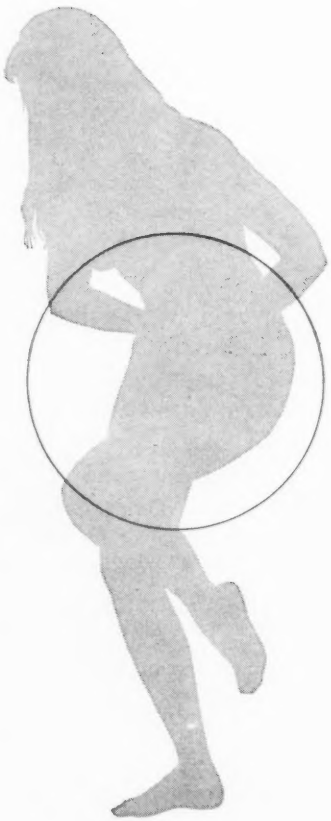
in female urethritis referred pain complicates diagnosis



Pain in the groin, suprapubic region, thighs and lower back is often caused by urethritis but, as a result of negative urinary findings, is attributed to other organs. Direct examination of the urethra helps localize the origin of referred pain, evidence of urethral inflammation calling for local therapy.

Younger women with bacterial urethritis respond to the antibacterial, anesthetic and dilating effects of FURACIN Inserts (formerly FURACIN Urethral Suppositories) containing nitrofurazone 0.2% and the local anesthetic diperodon·HCl 2% in a water-dispersible base. Each suppository hermetically sealed in silver foil, box of 12.

Older women respond to the estrogenic, antibacterial, anesthetic and dilating effects of FURESTROL Suppositories containing, in addition to nitrofurazone and diperodon ·HCl, diethylstilbestrol 0.0077% (0.1 mg.) which corrects postmenopausal urethritis at the cellular level. Each suppository hermetically sealed in orchid foil, box of 12.

FURACIN® INSERTS and FURESTROL® SUPPOSITORIES

brand of nitrofurazone

alleviate pain—simplify treatment

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Antibiotic/Antifungal EAR DROPS

Clinically Proven Results...controls infection/reduces exudation/stops pruritus/relieves pain/does not distort otic landmarks/physiologic pH/virtually nonsensitizing and nonirritating. FORMULA: Neomycin (from sulfate), 3.5 mg., and sodium propionate, 50 mg. per cc. Available in 15 cc. dropper bottles.

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OTITIS MEDIA

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ANTI-INFLAMMATORY/Antibiotic/Antifungal EAR DROPS

Effective relief in 82% of 3334 cases.* Sterile Otic Drops—ideal for [illegible] when inflammation is present. Provides the same outstanding clinical benefits of Otobiotic, plus prednisolone for anti-inflammatory effectiveness. FORMULA: Prednisolone acetate 5 mg., neomycin (from sulfate), 3.5 mg. and sodium propionate, 50 mg. per cc. Available in 5 cc. bottles with "steri-sealed" dropper.
*Case reports on file, White Laboratories.

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YOUR ALLERGIC PATIENT REMAINS ASYMPTOMATIC AND ALERT!

[illegible] Action Tablets 4 mg. and 8 mg., bottles of 100. TABLETS, 2 mg., and bottles of 100. SYRUP, 2 mg./5cc., pint bottles.

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In nasal congestion and rhinorrhea due to head colds, allergies and sinusitis—
Decongests Nasal and Sinus Passages...
Dries Mucous Secretions!
A sensibly simple formula: Disomer (dexbrompheniramine maleate) 2 mg., pseudoephedrine sulfate 60 mg. Available in bottles of 100 scored tablets.

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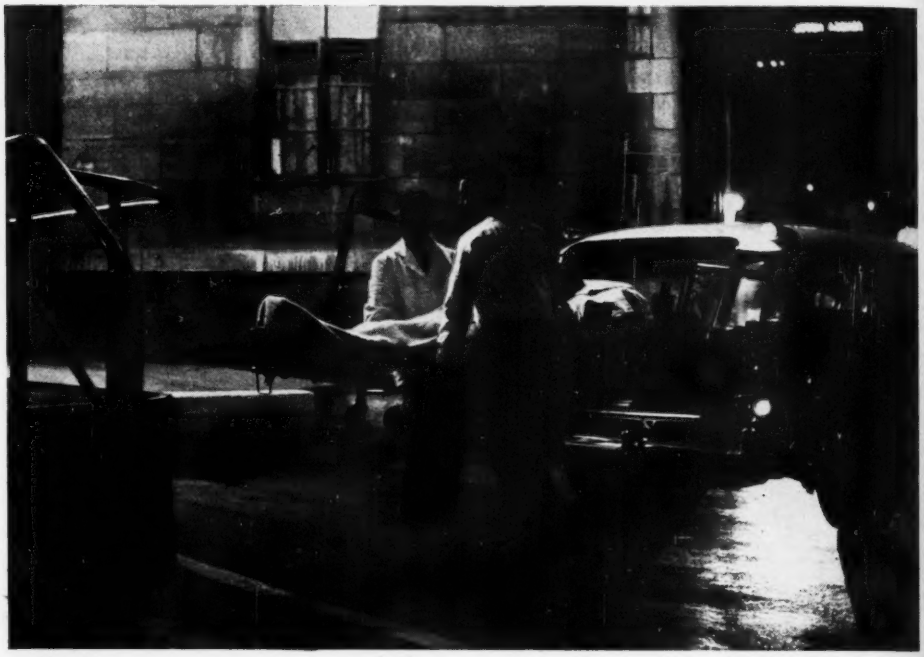
What now?



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to control inflammation, swelling and pain in ACCIDENTAL TRAUMA and general surgery[1-3]

In a study of 491 cases that included 47 fractures, 45 tonsillectomies, 61 herniotomies and 31 cyst removals, it was concluded that: "chymotrypsin reduces or prevents traumatic and surgical edema and hematoma, accelerates absorption of blood and lymph effusions, reduces pain, promotes wound-healing, and may enhance or augment the action of antibiotics."[1]

1. Cigarroa,. L G.: J. Internat. Coll. Surgeons *34*:442, 1960. 2. Teitel, L. H., *et al.*: Indust. Med. *29*:150, 1960. 3. Billow, B. W., *et al.*: Southwestern Med. *41*:286, 1960.

the systemic route to faster healing at any location

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CHYMAR

Chymar Aqueous and Chymar (in oil) contain chymotrypsin, a proteolytic enzyme with systemic anti-inflammatory and antiedematous properties. ACTION: Reduces inflammation of all types; reduces and prevents edema except that of cardiac or renal origin; hastens absorption of blood and lymph extravasates; restores local circulation; promotes healing; reduces pain. INDICATIONS: Chymar is indicated in respiratory conditions to liquefy thickened secretions and suppress inflammation of mucosa and bronchiolar tissue; in accidental trauma to speed reduction of hematoma and edema; in inflammatory dermatoses to ameliorate acute inflammation in conjunction with standard therapies; in gynecologic conditions to suppress inflammation and edema and stimulate healing; in surgical procedures to minimize surgical trauma with inflammation and swelling; in genito-urinary disorders to reduce pain and promote faster resolution; in ophthalmic and otorhinolaryngic conditions to lessen hematoma, edema and inflammatory changes; in dental procedures to lessen pain and gum tissue trauma, with inflammation and swelling, in reaction to extractions or surgery. PRECAUTIONS: Chymar and Chymar Aqueous are for intramuscular injection only. Although sensitivity to chymotrypsin is uncommon, allergic or anaphylactic reactions may occur as with any foreign protein. The usual remedial agents should be readily available in case of untoward reaction. Precautions (scratch testing for Chymar, scratch or intradermal testing for Chymar Aqueous) should be exercised in those patients with known or suspected allergies or sensitivities. DOSAGE: 0.5 cc. to 1.0 cc. deep intramuscularly once or twice daily, depending on severity of condition. Decrease frequency as course of condition is altered. In chronic or recurrent conditions, 0.5 cc. to 1.0 cc. once or twice weekly. SUPPLIED: 5 cc. vials, 5000 Armour Units of proteolytic activity per cc.

contains everything most coughers need...

in each 5 cc. (1 teaspoonful):

Dimetane 2 mg.
(Parabromdylamine [Brompheniramine] Maleate),
the antihistamine most likely to succeed.

Phenylephrine HCl 5 mg. and Phenylpropanolamine HCl 5 mg.,
two highly approved decongestants.

Glyceryl Guaiacolate 100 mg.,
the expectorant that works best –
increases respiratory tract fluid almost 200%.

IN DIMETANE EXPECTORANT-DC
added Codeine Phosphate 10 mg./5 cc.(exempt narcotic),
when additional cough suppressant action is needed.

for less frequent, more productive cough...

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"just right" relief from pain ...be it subtle or severe

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Acetophenetidin ..... gr. 2½
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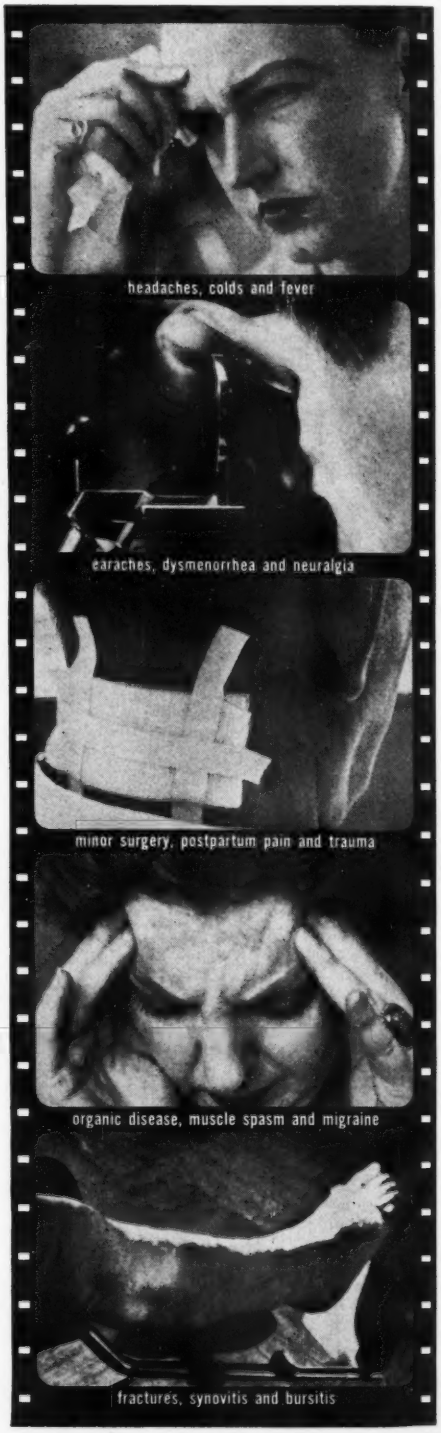
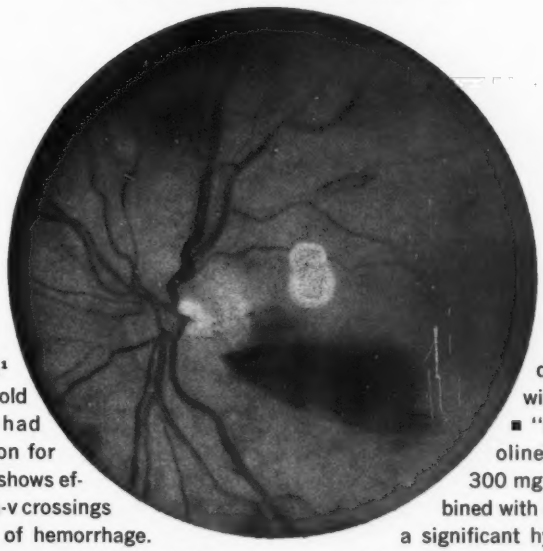

headaches, colds and fever
earaches, dysmenorrhea and neuralgia
minor surgery, postpartum pain and trauma
organic disease, muscle spasm and migraine
fractures, synovitis and bursitis

When blood pressure must come down



AS IN THIS CASE:[1] Fundus of 62-year-old female who has had severe hypertension for many years. Photo shows effect of pressure at a-v crossings and various types of hemorrhage.

■ When you see eyeground changes like this—with such hypertensive symptoms as dizziness and headache—your patient is a candidate for Serpasil-Apresoline. With this combination the antihypertensive action of Serpasil complements that of Apresoline to bring blood pressure down to near-normal levels in many cases. Side effects can be reduced to a minimum, since Apresoline is effective in lower dosage when given with Serpasil.

■ "Hydralazine [Apresoline] in daily doses of 300 mg. or less, when combined with reserpine, produced a significant hypotensive effect in a large majority of our patients with fixed hypertension of over three years' duration."[2]

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1. Bedell, A. J.: Clin. Symposia 9:135 (Sept.-Oct.) 1957.
2. Lee, R. E., Seligman, A. M., Goebel, D., Fulton, L. A., and Clark, M. A.: Ann. Int. Med. 44:456 (March) 1956.

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(Organic diseases of the nervous system, psychoneuroses, psychosomatic disorders, mood disturbances, social adjustment problems, involutional reactions and selective psychotic and alcoholic problems.)

DR. JAMES ASA SHIELD DR. WEIR M. TUCKER
DR. GEORGE S. FULTZ, JR. DR. AMELIA G. WOOD

Continued from page 56

City; and Dr. Clarence M. Johnson, Athens, Georgia.

Dr. Ralph O. Rychener, Memphis, has been elected President of the National Medical Foundation for Eye Care.

TEXAS

The Scott and White Clinic will hold its ninth annual Postgraduate Conference in Medicine and Surgery in Temple, Texas, March 5-7, 1961. Practical aspects of medicine and surgery will be presented through clinics and open discussions. Registration fee is $25.00. For further information write Mrs. Judy Ingram, Scott and White Clinic, Temple, Texas.

Dr. Henry R. Hoskins, San Antonio, is the new First Vice-President of the Southern Chapter of the American College of Chest Physicians.

Dr. Merle D. Thomas, El Paso, has been chosen Secretary-Treasurer of the Southwestern Medical Association. Serving on the Executive Committee will be Drs. Russell L. Deter and Louis Breck, El Paso.

The American Society of Plastic and Reconstructive Surgery has named Dr. Charles W. Tennison, San Antonio, as its President-Elect.

At a recent meeting of the Hospitals-Insurance-Physicians Joint Advisory Committee of Texas, Dr. C. D. Bussey, Dallas, was elected Vice-President.

VIRGINIA

All officers of the Virginia Chapter of the American College of Chest Physicians were re-elected for a

Continued on page 70

Appalachian Hall • Asheville, North Carolina

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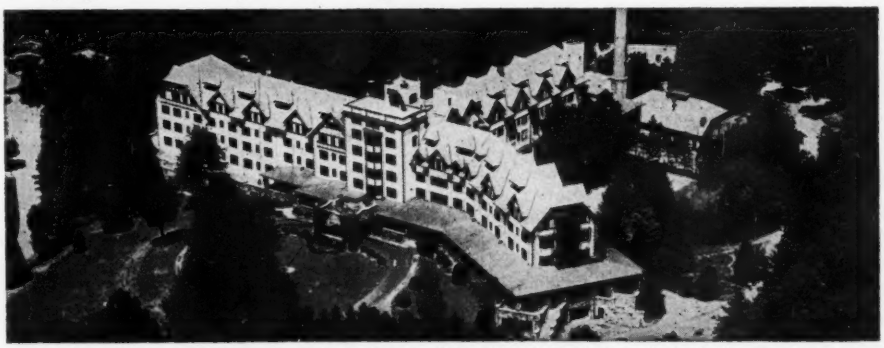

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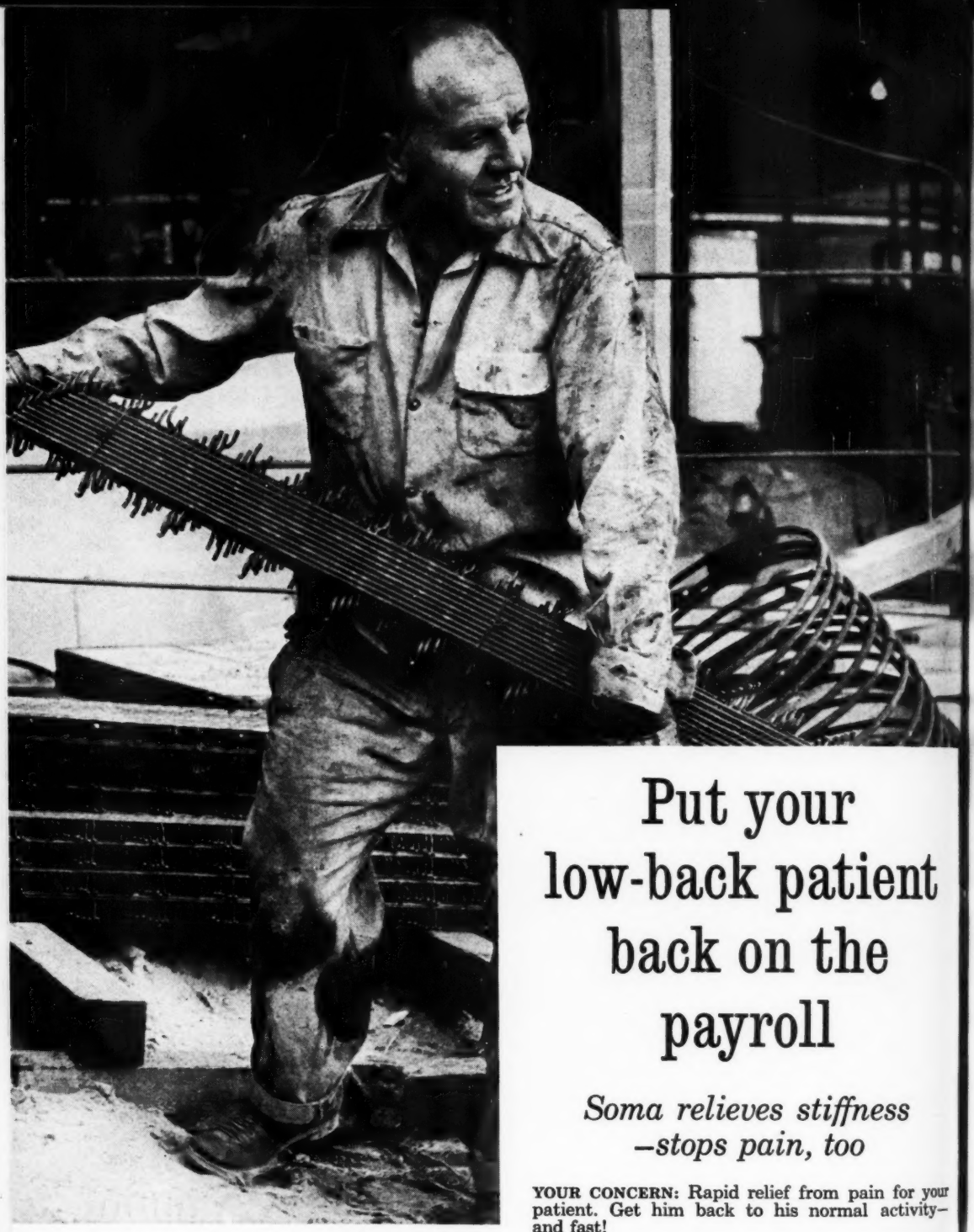

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Soma relieves stiffness –stops pain, too

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HOW SOMA HELPS: Soma provides direct pain relief while it relaxes muscle spasm.

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Soma is notably safe. Side effects are rare. Drowsiness may occur, but usually only in higher dosages. Soma is available in 350 mg. tablets. **USUAL DOSAGE: 1 TABLET Q.I.D.**

The muscle relaxant with an independent pain-relieving action

SOMA®

(carisoprodol, Wallace)

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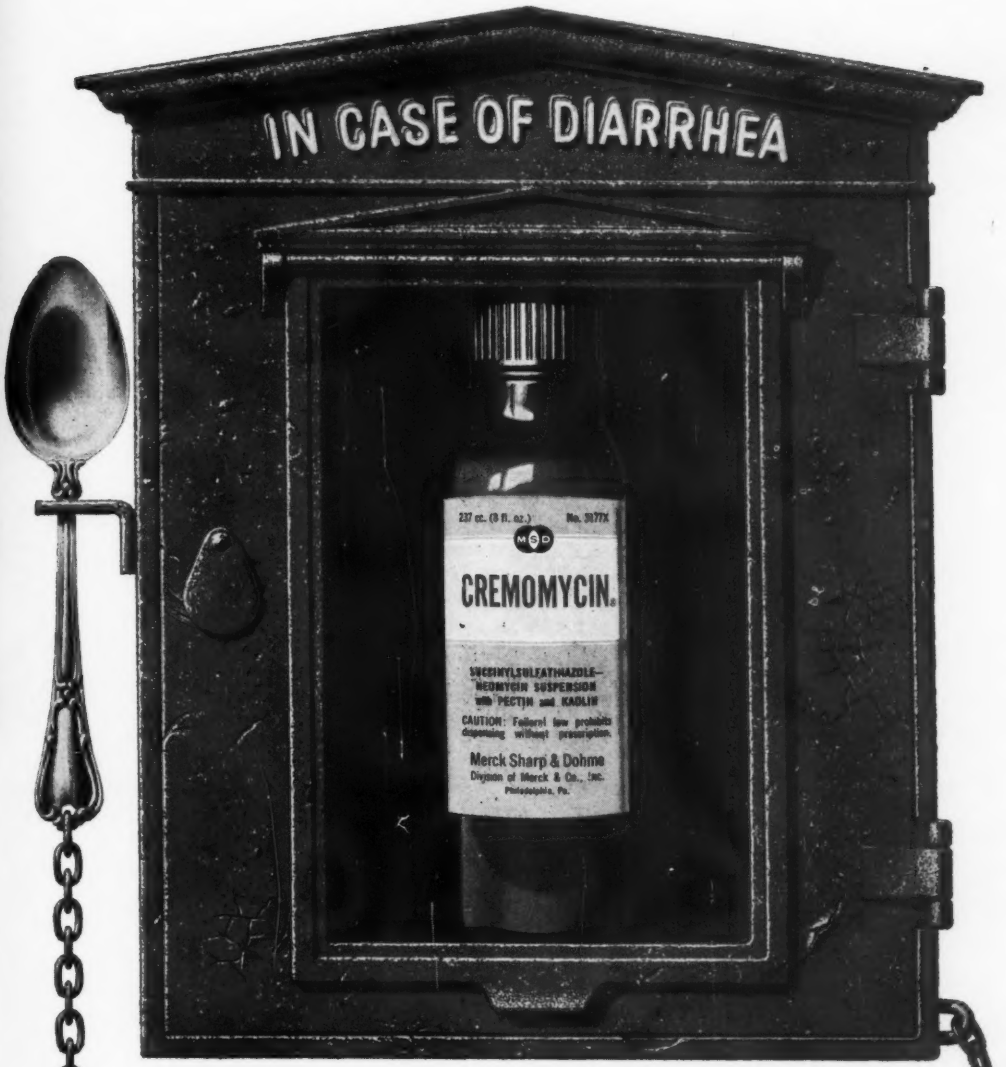

Cremomycin® provides rapid relief of virtually all diarrheas

NEOMYCIN—rapidly bactericidal against most intestinal pathogens, but relatively ineffective against certain diarrhea-causing organisms.

SULFASUXIDINE® (succinylsulfathiazole)—an ideal adjunct to neomycin because it is highly effective against Clostridia and certain other neomycin-resistant organisms.

KAOLIN AND PECTIN—coat and soothe the inflamed mucosa, adsorb toxins, help reduce intestinal hypermotility, help provide rapid symptomatic relief.

For additional information, write Professional Services, Merck Sharp & Dohme, West Point, Pa.

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Continued from page 66

second term. They are Dr. Charles G. Pearson, Charlottesville, President; Dr. G. E. Ewart, Richmond, Vice-President; and Dr. C. C. Smith, Catawba, Secretary-Treasurer.

Dr. James M. Moss, Alexandria, was elected Chairman of the Virginia Section of the American College of Physicians. Dr. William H. Harris, Richmond, was re-elected Secretary-Treasurer.

At a recent meeting of the Virginia Obstetrical and Gynecological Society the following officers were elected: Dr. P. Harrison Picot, Alexandria, President; Dr. A. Tyree Finch, Farmville, President-Elect; Dr. W. Norman Thornton, Jr., Charlottesville, Vice-President; and Dr. Brock D. Jones, Jr., Norfolk, Secretary-Treasurer.

Dr. Philip Trout, Roanoke, is President of the Virginia Orthopedic Society for 1961. Officers elected to serve with him are Dr. Louis Ripley, Roanoke, President-Elect; and Dr. Earnest B. Carpenter, Richmond, Secretary-Treasurer.

The Mid-Tidewater Medical Society has elected Dr. S. R. Ransome, Mathews, President; Dr. M. H. Harris, West Point, Secretary; and Dr. W. H. Hosfield, West Point, Treasurer.

Dr. Hugh Trout, Roanoke, was installed as President of the Roanoke Academy of Medicine. Other officers were Dr. J. Lawson Cabaniss, President-Elect; Dr. Wade H. Saunders, Vice-President; and Dr. Walter S. Johnson, Secretary-Treasurer.

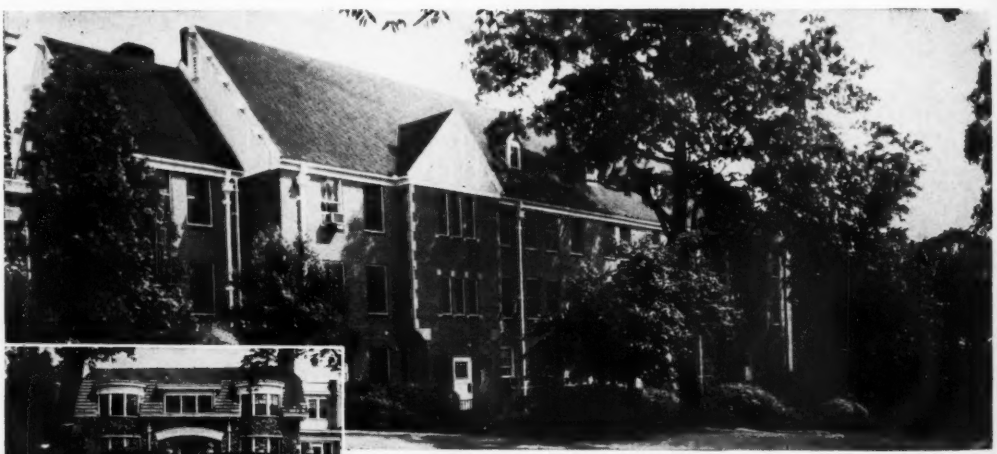
New members of the Medical Society of Virginia are Drs. Charles Lee Ferguson, Edward Sidney Hunter, Jr., and James Oliver Willie, Norfolk; Drs. Philip Frederick, Jr., Panos M. Ioakimidis, Fletcher Bailey Owen, Jr., Harry Shepard Rowland, Jr., and Antonio Gomez Velo, Richmond; Drs. William Bryant Pollard, and William Allen Scoggin, Charlottesville; and Dr. Lloyd Tayloe Griffith, Mt. Holly.

The Charlottesville Exchange Club has awarded its "Golden Deeds Award" to Dr. Montie L. Rea, Charlottesville. The award is for outstanding contributions through good deeds and community service.

Dr. Russell V. Buxton, Newport News, is the new President of the Peninsula Unit of the American Cancer Society.

New Fellows of the American College of Surgeons from Virginia are Drs. J. Hamilton Allan, Robert G. Kindred, Cary N. Moon, Jr., and Albert J. Paquin, Charlottesville; Dr. Allan Hall, Annandale; Dr. Murdo M. Mackay, Clifton Forge; Dr. Garrett M. Swain, Falls Church; Dr. Harry M. Henderson, Jr., Ft. Belvoir; Dr. Thomas W. Sale, Hampton; Dr. William W. Old III, Lexington; Dr. Richard N. deNiord, Jr., Lynchburg; Dr. Benjamin S. Perkins, Marion; Dr. Jack A. Lawson, Newport News; Drs. Oswald W. Hoffler and Levi Old, Jr., Norfolk; Drs. Virgil A. Beuerman and Philip O. Geib, Portsmouth; Drs. James W. Brooks and Yale H. Zimberg, Richmond; Dr. Lee W. Shaffer, Roanoke; Dr. Wirt L. Davis, South Hill; and Dr. Carrington Harrison, Winchester.

Continued on page 72



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Fostex® treats their acne while they wash

completely emulsifies and washes off excess oil from the skin.

penetrates and softens comedones, unblocks pores and facilitates removal of sebum plugs.

removes papule coverings and permits drainage of sebaceous glands.

Patients like Fostex because it is so easy to use. They simply wash acne skin 2 to 4 times a day with Fostex Cream or Fostex Cake, instead of using soap.

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*sodium lauryl sulfoacetate, sodium alkyl aryl polyether sulfonate and sodium dioctyl sulfosuccinate.

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FOSTEX CREAM, in 4.5 oz. jars.
FOSTEX CAKE, in bar form.

Fostex Cream and Fostex Cake are interchangeable for therapeutic washing of the skin. Fostex Cream is approximately twice as drying as Fostex Cake.

Fostex Cream is also used as a therapeutic shampoo in dandruff and oily scalp.

Write for samples.

WESTWOOD PHARMACEUTICALS • Buffalo 13, New York

Continued from page 70

Dr. J. Marshall Winkfield, Stasburg, has been appointed to the School Trustee Electoral Board of Shenandoah County.

WEST VIRGINIA

Dr. Kathryn A. Rainbow, Lakin, has been promoted to Superintendent of Lakin State Hospital.

Governor Cecil H. Underwood has named Dr. Pat A. Tuckwiler, Charleston, as a member of the State Advisory Board to the Department of Public Assistance.

The West Virginia Radiological Society has elected two new officers and re-elected one. Dr. Andrew K. Butler, Wheeling, is the new President; and Dr. Hubert A. Shaffer, Morgantown, is Vice-President. Dr. Karl J. Myers, Philippi, was re-elected Secretary-Treasurer.

Two physicians have been re-elected to State Legislature. Dr. Ward Wylie, Mullens, a member of the Senate, began his four year term Jan. 1, 1961. Dr. Thomas G. Matney, Peterstown, a member of the House of Delegates from Monroe County, will serve another two year term.

Two new members of the West Virginia State Medical Association are Dr. Irvin S. Perry, Charleston, and Dr. E. Walter Rice, Martinsburg.

During the annual meeting of the Academy of Psychosomatic Medicine, Dr. Max Koenigsberg, Charleston, was elected to the Executive Committee.

President of the West Virginia School of Medicine, Elvis J. Stahr, Jr., has announced the appointment of Dr. Rex B. Conn, as Assistant Professor of Medicine in charge of the Division of Laboratory Medicine. President Stahr also announced the appointment of Dr. Robert R. Trotter as Clinical Associate Professor of Surgery and Chairman of the Division of Ophthalmology.

Dr. Nicholas W. Fugo, Professor and Chairman of the Department of Obstetrics and Gynecology at West Virginia University School of Medicine, has recently been appointed to the National Institutes of Health's Pharmacology and Endocrinology Fellowships Review Panel.

Dr. William E. Christie, Jr., and Dr. Melvin C. Reinhard, Elkins, became members of the Barbour-Randolph-Tucker Medical Society.

Members of the Cabel County Medical Society named Dr. James A. Heckman, Huntington, as President-Elect of the Society. Other officers elected were Dr. Jack Leckie, Vice-President; Dr. W. L. Neal, Secretary; and Dr. C. H. Boso, Treasurer. All are Huntington physicians.

Dr. D. Franklin Milam, West Virginia University School of Medicine, has transferred his membership from Kanawha Medical Society to the Monongalia County Medical Society.

The Ohio County Medical Society installed Dr. S. S. Bobes, Wheeling, as its new President.

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Cartoon idea by pharmacist Emil Magdalener

Many of you may have seen a recent cartoon depicting a midnight scene in front of a pharmacy. A woman is pounding on the door and the pharmacist is leaning out the window of his apartment over the store. "Open up," shouts the woman. "My husband is sick and I need a stamp so I can send this prescription to the mail order house."

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